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ABSTRACT

A study focused on library formula budgeting practices with a special concern for the typical upper division university functioning in a state system of higher education. The basic objectives of this research project were to develop a model budget for upper division university libraries and to demonstrate the use of formulas in predicting the anticipated resources necessary to operate and maintain upper division university libraries (UDUL). Existing formulas were examined and evaluated. These, together with the UDUL models, were field tested in application at ten upper division institutions. The UDUL formulas were evaluated by a panel of experts and, finally, conclusions and recommendations were drawn concerning the feasibility and utilization value of a formula designed for upper division university libraries. The scope of the study was limited to formula budgeting. The UDUL formulas developed cover all major budget categories commonly found in academic libraries, i.e., salaries, materials, and expense. A physical facility formula was excluded, since it is not typically part of an annual operating budget. (Author/SL)

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Prediction of Resource Needs:

A Model Budget Formula for
Upper Division University
Libraries

ABSTRACT

by

Peter Spyers-Duran, Ed. D.

Nova University 1975

Chairman: Dr. Frederick C. Kintzer

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The need for special funding for upper division universities has been argued. This study focused on library formula budgeting practices with a special concern for the typical upper division university functioning in a state system of higher education. The basic objectives of this developmental research project were twofold: (1) to develop a model budget for upper division university libraries (UDUL) and (2) to demonstrate the use of formulas in predicting the anticipated resources necessary to operate and maintain upper division university libraries.

The objectives were developed through six phases. Phases one through three consisted of literature search, data collection, and the examination and evaluation of existing formulas. Phase four field tested the selected formulas, together with the UDUL models, in application to ten upper division institutions. Phase five consisted of an evaluation of the UDUL formulas by a panel of experts from leading upper division libraries. Phase six drew conclusions and presented

recommendations concerning the feasibility and utilization value of a formula designed for upper division university libraries.

The scope of the study was limited to formula budgeting. This is a method of line-item budgeting based upon quantitative models which express the budgetary support needs generated by operating programs and functions. The UDUL formulas developed cover all major budget categories commonly found in academic libraries, i. e., salaries, materials and expense. A physical facility formula was excluded from this study, since it is not typically part of an annual operating budget.

Although the study was necessarily limited to institutions serving a statewide system of higher education, other institutions may find the formula application useful.

The primary goal of the study was to develop a model library budget formula that would be particularly sensitive to institutions without lower division enrollments. This goal has been achieved, with the limitations noted under the conclusions. The major recommendation resulting from the study is that upper division institutions give serious consideration to the adoption of the UDUL formulas presented.

PREDICTION OF RESOURCE NEEDS:
A MODEL BUDGET FORMULA FOR
UPPER DIVISION UNIVERSITY
LIBRARIES

by
Peter Spyers-Duran

A MAJOR APPLIED RESEARCH PROJECT PRESENTED
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF EDUCATION

NOVA UNIVERSITY

1975

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Chapter 1

RATIONALE FOR THE STUDY

Introduction

There has never been a greater need for studies of the methods by which the financial needs of public institutions of higher education are determined. This is also true of the libraries serving these institutions, requiring increasingly larger sums of money year after year. Much improvement in existing methods has been noted; however, there are many problems yet to be resolved.

This study will focus on library formula budgeting practices with a special concern for the typical upper division university in a state system of higher education. Library formula budgeting is a rather new phenomenon. As a systemwide budgeting method, the library formula is less than ten years old and barely through the state of infancy. In many states the formula approach is just being developed. Some states, like Florida or Texas, have been utilizing the statewide application of library formulas for university libraries for the past three to four years. These two state systems have about one-third of all upper division state universities in existence as of 1974.

The Texas system has exempted the upper division university libraries from the formula as of the 1974/75 academic year. They will come under a formula of their own or the existing Texas formula, depending on the outcome of currently conducted studies. The findings of this and other studies will have some influence on the development and direction of the upper division library formula in Texas as well as elsewhere.

The library formulas in Florida (and presumably in other states as well) have simply assumed that the upper division institution is the upper half of a four-year college without any special consideration of the problem this might present in rendering adequate quality library service.

Library formulas that serve the traditional university along with the upper division university system have been in effect for the past few years, and institutions have survived. There is a difference, however, between mere survival and quality and equality in budgeting methods that would support the upper division libraries commensurate with their specified missions.

Do libraries serving upper division universities need a special funding formula? An informal survey of library directors employed by upper division universities revealed an emphatic yes. In addition, we find Burington Reed, Commissioner of Higher Education, State of Texas, supporting this notion.¹

Reed felt that student services, library support and faculty salaries deserve special considerations when planning for the upper division university:

"The purpose of all formulas is to provide adequate and equitable funding for the functions being performed by an institution. The functions being performed by an upper-level institution are somewhat different from those performed by four-year institutions.

The whole area of special formulas for upper-level institutions needs to be studied, with thorough research done to determine how the different functions of these new institutions may affect their need for funding. We in Texas have not yet done that research; therefore, there is no sound informational base on which I base my observations on the need for special formulas for upper-level institutions...

The formula for library support also needs to be studied carefully to determine whether or not the present formula, which is for four-year institutions, would be equitable to meet the needs of institutions offering only upper-division and graduate work."²

Reed illustrated the variations in instructional cost by level of teaching citing information collected by the Coordinating Board. Their report indicates that the student-teacher ratio, the single most important factor in determining the cost of instruction, is larger in the freshman-sophomore courses than in junior-senior and graduate levels. Salaries were cited by Reed as another variation in instructional cost. Lower-division instructors are paid less, as the upper division classes are more likely to draw the most experienced senior faculty. Hence, according to Reed, productivity should be funded with full consideration of the prevailing practices.

"Any special funding formula should be an attempt to allocate like amounts of money for like functions. The upper-level institution is a response to the needs of students for more individualized programs, for strong counseling programs, and for teaching techniques and methodology which meets student needs. As formulas are developed, they should reflect these important functions of the upper-level institution."³

Dr. Roy Lassiter, Vice President for Academic Affairs at University of North Florida, an upper division state university, presented a case for special funding of Upper Division Universities within the Florida State University System.⁴ Lassiter discovered that the traditional four-year institutions received upper-division level funding for lower-division students enrolled in upper-division classes. In fact, he found that in one institution 17.7 percent of the total upper-level credit hours were generated by freshman-sophomores, who thus increased upper-level enrollments by 4,800 FTE. Dr. Lassiter has demonstrated in this paper that the four-year institutions support and subsidize their more expensive upper-division classes to a large extent from the lower-division student overflow. This, of course, is not possible for the Upper Division Universities by the simple fact that these institutions do not have freshman-sophomore classes, thus creating a funding inequity among these two types of institutions.

A thorough literature search revealed that while most areas of upper division universities have been studied, only a relatively small amount of investigation has been conducted in the area of special budgeting formulas for this type institution. There is a definite absence of such studies for upper division libraries and there are no major works available on upper division university library formulas.

What is an Upper Division University?

The upper division university is an institution which admits students only after completion of a minimum of two years of collegiate work. Such a university typically offers academic work on the junior and senior year levels. It may or may not also offer postgraduate work on the master and doctoral studies levels.

The concept of the upper division university is by no means new to higher education, although the expansion of the junior college movement in the United States has created a significant recent interest in the establishment of upper division universities. In fact, most of the existing institutions were created in the sixties and early seventies. They typically serve urban centers and are located in states which have active community college programs. By contrast, the established state universities, in most instances, are not located in population centers. Thus, the establishment of new upper level institutions in strategic geographic locations affords more entry and exit points in the educational system than were previously available.⁵

A major purpose of public upper level universities is to serve students who have finished their first two years of general education in a junior or community college. This stated purpose is a logical outcome of the rapid and successful growth of the junior and community colleges. As the number of AA degree graduates increased so did the need to provide a continuum in the educational system.

Altman believes that the whole German philosophy of higher education is centered around the theme that no preparatory work belongs in a university.⁶ When a student enters a university he is to come fully prepared to enter a specialized field, the broad liberal arts background having been learned in high school and during the freshman-sophomore years. Hence, Altman sees the role of the upper division university as one that will not have to be concerned with general education. General education will have been obtained during the first two years, freeing the upper division institutions to concentrate on specializations and preprofessional programs. American universities have attempted to follow this pattern at least in theory. In practice, however, one finds a considerable percentage of mix of lower-division students taking upper-division courses. Conversely, it is possible for a junior or senior level student to finish some of the required lower-division general education classes just before graduation.

The upper division university, its students and its faculty have special characteristics which must be noted, as they have a direct or indirect impact on institutional budgetary considerations:

1. The average student at the upper level university is older than his counterpart in a traditional four-year institution.⁷ The older student generally makes wiser curricular choices and seems to have clearer educational objectives than does the traditional student who is often ten to fifteen years younger.

As a consequence, upper division institutions place probably less emphasis on the liberal arts and tend to concentrate on vocational and professional programs. This does not necessarily mean the total abandonment of liberal arts offerings. It does mean, however, that upper division schools could not ignore the interests of junior college graduates in those areas.

2. A great majority of the students in upper division universities come from low to middle class income families. The

typical student supports himself and is employed while attending school. The consequence of this phenomenon is that the mix of part-time to full-time students will be considerably higher than on traditional campuses.

3. The nature of the student body creates a basically commuter campus that is typical for the junior college from where these students have transferred. Although some upper division universities have some dormitory space, others do not. Dormitory space is an important consideration as far as demands for library space and services are concerned. A commuter campus experiences heavy student use of the library when classes are offered and, conversely, light student use when there are few or no classes.

4. A rather high percentage of part-time students suggests that many of them do not go through an academic program in an uninterrupted schedule. This, in fact, is one of the great advantages of the upper division school. The student is able to interrupt and then return to an educational institution at different times in his lifetime.

Educational opportunities are increasingly important as many professions and occupations demand updating; also, some adults may wish to prepare for a second career or a hobby. The setting and orientation of the upper level university is ideal to serve these needs without the stigmas associated with attending a traditional college.⁸

5. Most of the upper division universities have formed their own unique philosophy in relation to curriculum offerings, degree requirements, grading system and educational administration. Most attempt to be innovative and creative in the complexity and diversity of programs offered. One can only assume that this phenomenon is related to a problem common to all upper division universities. All of these universities seem to have had enrollment problems even during the heydays of the sixties.⁹

6. The typical faculty member attracted to an upper division university tends to be an individual with a terminal degree. As such,

he or she also tends to have research interests in addition to the teaching assignments. The percentage of active research conducted per FTE faculty seems to be high. The research projects generate library activity and create demands for collections that newly created institutions have difficulty in satisfying.

Are upper division universities here to stay or will they transform into the four-year type institution after a period of time? The answer is not difficult to formulate. One must recognize that the public junior colleges are the fastest growing segment of American higher education. The junior colleges will generate an increasing demand for the upper level education. This observation is true especially in those areas where a system of community or junior colleges is in operation.

What alternatives are there to provide the baccalaureate need on a regional basis? The Coordinating Board of the Texas College and University System recognized the available alternatives that may be considered valid in other states as well:¹⁰

1. To expand junior colleges to four years. This possibility received opposition from the junior college sector which felt that, among other reasons, their community service and vocational-technical programs would suffer.

2. To create new four-year institutions. This avenue promised to be financially unfeasible. Facilities and programs at the lower-division level are available in the junior colleges and would represent unnecessary duplication. In addition, there would be unnecessary competition for students among institutions.

3. To create upper division colleges and universities. This has captured the imagination of educators and legislators in Texas and several other states.

An upper division university can and should provide an educational experience uniquely tailored to the needs of the junior

college transfer, as well as to other students who elect to change institutions after completion of their sophomore year. They were established for this purpose. The upper level institution provides an economically and educationally feasible alternative to the four-year institution which would duplicate the offerings of existent junior colleges. This is particularly true in those states in which public junior colleges already provide convenient access to higher education for a large number of students.

The student at the upper division university level has already undergone the initial sifting and sorting. He is somewhat older than the traditional college student, more mature and probably highly motivated. Yet, upper level institutions must concentrate some of their resources and services to minimize the "transfer shock" which often accompanies the new student from the junior college.

Existing upper division universities have demonstrated this type of institution to be workable and capable of serving as a capstone to a growing number of public educational systems.¹¹

How Do Upper Division University Libraries Differ from Other Libraries?

The objectives of a typical university library are based on the objectives of the institution itself. Essentially these are: (1) to make available the books, periodicals, government publications, films, maps, records and other instructional and research materials necessary for conducting a successful university program; (2) to assist and cooperate with faculty members in their varied instructional and research programs; (3) to encourage and teach students in the effective use of collections; (4) to encourage students to develop the habit of self-education; (5) to provide a "library environment" that is conducive to study, learning and research.¹² While institutional objectives may be very similar, the two types of institutions--upper division universities and traditional universities--have uniquely different characteristics.

An exhaustive literature search failed to yield discussion on the differences that may exist among libraries in upper division universities and traditional universities. This area itself deserves further in-depth investigation. For the purposes of this research, however, it is probably adequate to list some of the obvious differences that do exist and to state factors that exert influence and demand on the upper division university library.

1. Age of institutions. The majority of state supported upper division universities have been in existence for less than five years. Florida Atlantic University, one of the more established institutions, is about ten years old. The age of the institution reflects on the size and quality of the library collections. Quality in new library collections requires time and special funds to permit the development of the desired depth and mix of subject matters.

In creating instant university libraries, the challenge is two-fold. First, such a library must keep current in what is being published of curricular and research interest for the faculty. Second, such a library must buy some of the important material that was published in the past. Public upper division libraries, by and large, are instant libraries and will stay in this pattern of operation for at least the first twenty-five years of existence. Obviously the first year of operation will have greater demands for retrospective material than the twenty-fifth. Nevertheless, the demand for retrospective material will be there. The four-year institution (unless it is a brand new university) will not have the need of similar dimensions for retrospective purchases.

2. Need for some lower-division library materials. Upper division libraries need some lower-division book and periodical purchases in addition to the specialized advanced works. This is contrary to present formula budgeting practices that use number and level of students enrolled as one of the variables for support. Just what

percentage of a collection in an upper division library should be at the lower division level we do not know. Since there are no published studies on the matter, any estimate at this time would be arbitrary and inaccurate; however, at least two known parameters may be cited which are based on institutional experience:

A. Some transfer students arrive at the upper level institution without receiving the basic and introductory knowledge required in the college of his/her choice. This is not to be interpreted as a reflection on the junior college. Rather, it should be understood that the reasons for unpreparedness may be due to: (1) the student changed major after transfer; (2) the upper division university may offer programs that do not have junior college parallels.

B. Students who have studied a subject matter at one time may have to go back to elementary material to refresh their memories. For example, it is not uncommon for doctoral students taking Research Methods courses to study from the elementary freshman level statistics textbooks.

3. Experimentation and innovation. Upper division libraries have been the centers for experimentation and innovation in higher education during the past fifteen years. Their age, size and lack of traditions and old habits provided natural ground and environment for such activities. For example, Florida Atlantic University has pioneered in library automation. This institution's library was the first to produce a printed card catalog on a computer. It was equipped with teaching machines, listening rooms, language laboratories and other aids to independent learning. Classrooms were equipped with TV receivers, and the University invested heavily in TV studio and transmission facilities. Much of what was learned through bold experimentation has benefited and molded widespread library automation throughout the nation during the seventies.

Innovation and experimentation in a new, small institution can be made under reduced risk conditions and possibly at lower cost than in an older institution. This is probably due to the function size; however, the lower cost and risk factors still mean higher operating costs whenever experimentations are being carried out. It is a fact that innovation and experimentation is a way of life in an upper division university.

4. Characteristics of clientele served. The character and composition of the students attending upper division universities have an influence on the nature of library services, collections and physical facilities. It was noted earlier that the average age of the students is higher than found in a typical four-year institution. The older, more mature students tend to be more independent and are not afraid to explore subjects of interest in the library. As working adults, they are usually committed to learning and invariably insist on the availability of resources that make exploration of a subject matter and learning possible.

The upper division university students tend to make a special impact on library services in the Reference and Interlibrary Loan areas. The research problems with which they need assistance are more complex and, therefore, take longer to handle. This need is expensive to support. It has an important consequence on staffing requirements, in that more professional librarians will be needed to take care of fewer students; it also means that subject specialization of library staff is desirable. By contrast, the typical four-year institution has a mix of lower reference service, when it deals with freshman-sophomore students, that is easier to satisfy and therefore should cost less to render.

Interlibrary loan services are particularly active on the upper division and graduate levels. The more specialized the research

becomes on a given campus the less likely that its library will possess all the needed material for its researchers. Upper division universities seem to have a clientele that demands material beyond the available collections. The high level of interlibrary loan activity may also be a function of the relative newness of the upper division university libraries. Their collections are naturally smaller, as collection size is also a function of age; however, even large research libraries with several million volumes borrow from other libraries. This activity is not likely to disappear from the upper division university library as its collection size also increases over a period of time.

Summary

The purpose of formulas in institutional budgeting procedures is to provide adequate and equitable funding for the functions being performed by an institution. The functions performed by an upper division university are somewhat different from those performed by the traditional four-year institution.

There is little or no support in published literature that describes the fundamental differences between these types of institutions. This is probably a function of time, as the great majority of the existing upper division universities are less than five years old.

There is even less written about the significant similarities or dissimilarities that may or may not exist among the libraries serving these types of institutions. The author attempts to show that basic differences are inherent in the purposes of the upper division institutions and their libraries. The following factors were identified that make the upper division library needs unique:

1. The age of the institutions;
2. The need for lower division library material;

3. The upper division university library's typical commitment to experimentation and innovation;

4. Characteristics of clientele, including (a) mature, older student body; (b) faculty with advanced teaching and research interests; (c) close ties with community.

There may be other factors to be considered, but for the purposes of this study it is sufficient to note that some differences do exist which make upper division university libraries as unique as the institutions they serve.

Bibliography Chapter 1

- ¹Reed, Burington. Special Funding Formula for State Supported Upper Level Institutions. Dallas, 1972. 8 pages. ERIC Doc. ED 068026.
- ²ibid. pp. 6-7.
- ³ibid.
- ⁴Lassiter, Roy L. Allocation Model Employed by the State University System of Florida. Position Paper No. 1 (unpublished, University of North Florida, 1974).
- ⁵Cluster and Upper Division Colleges: New Organizational Forms in Higher Education. Issues in Higher Education, Number 2. Atlanta, Southern Regional Education Board, 1971.
- ⁶Altman, Robert A. The Upper Division College. San Francisco, Jossey-Bass, 1970.
- ⁷Sweet, David E. "Minnesota Metropolitan State College: A New Institution for New Students". Paper presented at the Annual Southern Regional Education Board Legislative Work Conference, July 21, 1972.
- ⁸ibid.
- ⁹Altman. op. cit. p. 167.
- ¹⁰Cluster and Upper Division Colleges. op. cit. p. 4.
- ¹¹Altman. op. cit. p. 175.
- ¹²Florida Atlantic University. "Objectives of the University Library". Boca Raton, 1970.

Chapter 2

LITERATURE SURVEY

Historical Background

The annual operating expenditures for academic library programs over the decade of 1963 to 1973 have increased from \$276,000,000 to some \$850,000,000 excluding capital outlays.¹ All indications are that the trend for even greater expenditures will continue. The magnitude of these library expenditures has created an apparent interest in budgeting procedures among academic librarians, presidents, fiscal officers and legislators.

An understanding of the historical development of the fiscal administration of academic institutions is basic to understanding the problems of formula budgeting techniques that are currently used or are under development in both higher education and libraries.

One of the first published works of major consequence on budgeting for higher education was Trevor Arnett's College and University Finance.² Arnett's book, published in 1922, was prompted by the rapid increases in the cost of higher education during the first two decades of the present century. He reported that the 1921-22 budgets of the large midwestern state universities had reached upwards of five million dollars. Many of Arnett's recommendations for institutional budgeting and management are being followed today.³

Following Arnett, Morey made important contributions to the literature during the 1930's. His work expanded on Arnett's writings to cover the multiple activities of the growing universities.⁴ Morey's principles of cost accounting form the current basic structures of college and university accounting today.

The American Council on Education formed a Financial Advisory Service headed by Morey in 1936. This Service has helped a large segment of the nation's colleges and universities by means of reports, bulletins, conferences. ACE published a two-volume reference work entitled College and University Business Administration in 1952. This work consisted of revisions to the 1935 edition of the Financial Reports for Colleges and Universities, including a series of recommendations for the administration of the non-accounting areas of the institutions. The references to budgeting in these works were designed for internal management and control of a single institution. The purpose of these budgets was simply to insure that an institution does not obligate itself in excess of available revenues. These ACE books were quite adequate for that purpose; they were not designed to demonstrate the financial needs in the institution. This work cautioned that income estimates should be realistic, underscoring the philosophy which dictated that budgets were built to allocate available resources, not projected needs.⁵

The Arnett-Morey influence on budgeting procedures in higher education was significant because they brought a degree of uniformity into a setting where autonomy and diversity had existed. They established principles which were needed for fiscal control and budgeting techniques in a modern institution. They have laid the groundwork and conditions basic to our present budgeting methods.

One can observe the developments in budgeting procedures at the federal, state, and local levels of government that have made an impact on educational institutions beginning in the early 1950's. The stages of governmental budgeting reform include a Hoover Commission recommendation that the budgeting accounts be changed to reflect functions and activities.⁶

During the mid-1950's the Rand Corporation published several reports regarding the deficiencies in military spending within the

Defense Development. The reports described the failure to relate budgeting and planning and suggested the use of program budgeting as a method of relating objectives and resources. It was in this setting in 1954 that the concept of program budgeting was projected for the Defense Department. Here "program" was to mean an integrated planning, programming, budgeting process that would bring together all of the resources to be applied to specific missions. The significant feature of this process was its effect on decision-making and control in the vital area of defense expenditures. While this program budgeting system had a notable impact on fiscal management, it left the traditional fiscal process relatively unchanged.⁷

The implementation of program budgeting in the Defense Department was made by Secretary of Defense Robert McNamara in 1963. President Johnson extended the concept of program budgeting to all federal agencies by Presidential Order in 1965.

Budget reform in state and local government has generally followed that of the federal government. In the case of the Planning, Programming, Budgeting System (PPBS) the federal government made special efforts to promote its application. The federal government financed demonstration projects. One of the best known of such projects was the State-Local Finances Project at George Washington University.⁸ A 1968 survey shows that 28 states began steps toward initiating PPBS.⁹

The interest in program budgeting spread in the field of education also. A study published in 1966 by Williams states the benefits of program budgeting:

"The basic principle of program budgeting is to derive and structure an annual budget in such a way that it reflects the annual portion of all the major programs in a university which, in turn, promote the overall purposes and objectives of that institution. The single most important promoter of planning and programming landscape is the analysis which is behind the structural budget format."¹⁰

Farmer conceptualized the reasons for program budgeting in higher education in a monograph published by the Western Interstate Commission for Higher Education (WICHE), as follows:

"Planning and programming -- a two-step decision process -- represents the substance of PPBS. Budgeting is the mechanism for implementation and control not for basic decisionmaking. Planning requires a specific statement of institutional objectives, the development of alternative courses of action, and an analysis of these alternatives."¹¹

As several university systems began experimenting with PPBS models, doubts about its usefulness began to surface as evidenced in literature.

Mosher charged the advocates of PPBS with overselling, promising more than they could deliver, and promising results faster than they could deliver.¹² Mosher advanced an opinion that the Department of Defense model was inappropriate and misleading for state implementation. Cost effectiveness studies had been conducted in the Department of Defense since World War II. While that agency had such experience for twenty-five years, no such expertise in cost effectiveness was available at the state level or at the universities. This phenomenon had obvious consequences on the success or failure of PPBS.

Peterson expressed his concern over the use of PPBS in higher education. He stated:

"The high expectations of PPBS by its supporters in the federal government are exemplified by President Lyndon B. Johnson's statement in a message to Congress in 1967 that it 'brings to each department and agency of the federal government the most advanced techniques of modern business management'. Yet a Bureau of the Budget report could label it 'a source of disagreement and confusion' and a noted political scientist has suggested that it was initiated 'in a burst of grandiose claims of "breakthroughs" and exaggerated application to irrelevant situations'. "¹³

PPBS in Academic Library Environment

De Genaro acknowledged that planning, programming, budgeting systems could be applied to academic libraries, since the model existed.¹⁴ The implementation of such a system, however, would likely be faced with insurmountable problems. These problems as summarized by Mosher are probably common to academic libraries and other institutions:¹⁵

1. The prime prerequisite for effective PPBS administration is a clearly defined, specific set of objectives.

A. In a collegiate form of governance, who should determine these objectives?

B. How can values be defined in an academic environment where the rationality is diverse and not necessarily economic?

C. Academic undertakings have a multiplicity of objectives and the weighing of one against the rest is a monumental task.

2. The emphasis is on the ability to stretch quantitative values to input and output and eventually attach a dollar value to each.

How do we measure in those terms the learning process, research, and effective teaching at an academic institution?

3. Planning, programming, budgeting, by its very nature, tends to shift organizational structure. Typically, the balance of power tends to be centralized and strong, because of its knowledge and control position.

A. This characteristic of PPBS tends to be contrary to the collegiate form of management of universities with somewhat decentralized controls.

B. By its nature (as described in A.) PPBS creates conflict between academic interest groups and the central budget management.

Mason states that if the university as a whole does not have a program-planning-budgeting system, it is unlikely that the library of that institution can have a comprehensive PPB system of its own.¹⁶ He recognizes that the library, as a service organization, normally responds to demands placed by its users. In its response to these demands the library is expected to (1) supply bibliographic materials that are relevant to the research, instruction and service activities within the academic disciplines; (2) supply user services such as identifying, locating, retrieving and reproducing bibliographic sources; and (3) supply user space and any necessary equipment for using the library materials. Thus the level of total program-planning sophistication of a given campus will directly influence the level of program planning possible in the library.¹⁷

In spite of the serious attempts to introduce PPBS in academic libraries progress was very slow. Allen identified the following reasons and difficulties that caused libraries to abandon pure PPBS applications by the early seventies:

1. It is difficult to establish realistic objectives in terms of PPBS requirements for libraries.
2. Quantitative measurement taken in a library does not reflect quality.
3. Libraries have discovered that a truly effective PPBS requires extensive record gathering that can be analyzed and compared to quantified objectives.¹⁸

All of these activities are possible, but the cost of maintaining a good PPBS has been found to be more expensive than it is worth. Considerable staff resources must be devoted to these activities if done properly, an expense for which most libraries have found they cannot get support from funding agencies.¹⁹

Program-planning-budgeting is a management system. The literature acknowledges the theoretical benefits to be derived from it.

Yet, even successful applications of PPBS have been gradually abandoned in the face of difficulties.²⁰

Emergence of Library Formula Budgeting

As the pure PPB systems were rejected in libraries, formula budgeting methods gained widespread acceptance. It is interesting to note how some of the PPBS techniques left their mark of influence on currently developed formulas. Axford has written an article entitled, "An Approach to Performance Budgeting at the Florida Atlantic University Library".²¹ The article has very little to do with performance budgeting. Instead, it describes a library formula that is currently used by the State University System of Florida originally derived from unit cost studies and other work measurement techniques similar to the ones used in PPB systems.

The governing bodies rejecting PPBS have also expected a simpler and better budgeting technique to be introduced. Across the country an increasing number of state legislators began demanding more and easier-to-understand information, as they are asked to allocate large sums of funds for higher education in general and to libraries in particular. The widespread demand for reasonably good budget preparation and its justification has helped the formula approach to spread rather swiftly.

The reasons for formula rather than PPB are probably best expressed by Allen:²²

1. Formula is mechanical and therefore easier to prepare.
2. There appears to be justification for monies requested, because of its application to all institutions in the political jurisdiction.
3. The governing bodies have a sense of equity because each institution in the system is measured against the same criteria.
4. Fewer budgeting and planning skills are required to prepare and administer a formula budget.

A closer scrutiny of the acceptance of formula budgeting reveals that to some extent it is not a totally new practice. What we have seen emerge in the late sixties is a sophisticated formula approach which was much influenced by the PPBS movement. If this observation is accurate, then development of formula budgets in libraries can be categorized as (1) pre-1965 and (2) post-1965 formulas.

1. Pre-1965 formula approaches. For the sake of convenience, McAnally grouped library budget formulas used during the post-World War II period into four major categories: (A) arbitrary; (B) enrollment based; (C) comparative; and (D) unit cost based.²³

A. Arbitrary formula. This standard probably was the most commonly used method during the period from 1945 to 1965. It assigned an arbitrary percentage of the total educational and general budget of the institution.

The American Library Association's Standards for College and Research Libraries published in 1959 suggests the following formula rationale:

"The library budget should be determined in relation to the total budget of the institution for educational and general purposes. The program of library service outlined in these standards normally required a minimum of 5 percent of the total educational and general budget. The percentage must be higher if the library's holdings are seriously deficient, if there is rapid expansion in student population or course offerings, or if the institution fosters a wide range of studies at the Master's levels or programs of independent study."²⁴

It is not difficult to agree with Russell, who has criticized the weaknesses of this approach to financing libraries.²⁵ First, he points out that no norms have ever been established for the percentage distribution of expenditures among the various functions. Second, this is merely a device for dividing up available funds, whether adequate or not. Third, the funds are divided up and handed out

without evaluating in a reliable way the actual library needs.

Another type of arbitrary formula was applied in two states, Texas and California.²⁶ The Texas Commission on Higher Education set a figure of five percent as the rate of annual growth for each institution of higher education in Texas. The number of volumes generated for each institution was then multiplied by the average cost per volume (\$6,000 in 1961). The base size for the University of Texas was 1,200,000 volumes; for the other graduate type institutions, 400,000 volumes; and for all the state colleges, 100,000 volumes. The California System set a goal in 1961 at 3,000,000 volumes for the universities. Until the goal was reached in ten years, the libraries would grow at the rate of four percent (about 120,000 volumes annually). Both of these states abandoned the above plan several years ago. Again it is easy to see the weakness in the simplistic and arbitrary approach previously represented in these two state systems.

B. Enrollment based formula. The most commonly used formula in the late fifties and early sixties was the standard "not less than \$30.00 per full time equivalent student".²⁷ It is interesting to note that the Southern Association of Colleges and Secondary Schools no longer states the amount of dollars to be spent on FTE students in quantitative terms.

Enrollment was a popular way to express staffing needs in libraries during the early sixties. A typical formula was that of the State University of New York. This formula called for six professional positions and six clerical positions for the first 1,000 full-time regular students. For additional enrollments, staff was allocated on a scale:²⁸

<u>Enrollment</u>	<u>Professional Staff</u>	<u>Clerical Staff</u>
1400	7	7
1800	8	8
2200	9	9
2600	10	11
3000	10	12
3400	11	13
3800	11	14

Book funds were also generated on these bases in a number of state institutions in such states as New York and New Jersey, and by the California State Colleges.²⁹ These formulas either called for a specific amount per full-time students for both funds, or they specified the number of books the library should own per student. In 1961 the SUNY colleges received \$10.00 per student for book purchases. The California state colleges had a somewhat more complex formula calling for the acquisition of 4 volumes per student for the first 1,000 students, 2 volumes for the next 4,000, and one volume for all beyond 5,000. The cost per volume was based on past experience. Both of these techniques were abandoned by the late 1960's in favor of other budget formula techniques.

C. Comparative formulas. McAnally identified three types of comparisons used in budget preparations during the post-World War II period.³⁰

- (1) Comparison of proposed budget with current and past budgets within a given institution;
- (2) Comparison of institutional budgets with each institution that is part of the same state system;
- (3) Comparison of budgets among institutions in other states and/or in the region.

Comparisons used for budgeting purposes had several dangers. If an institutional budget had been historically bad, the in-house comparison perpetuated the bad support year after year. The interinstitutional comparison in a state system encouraged across-the-board mediocracy. It was also based on the fallacy that similar institutions needed identical budgets. Similar institutions may not be identical; hence, such arbitrary budgeting practices created unfortunate results. The third method that compared budgets with institutions outside the system, and even with out-of-state institutions, was useful to help "keep up with the Jones's". In many institutions such comparisons were made regularly to justify budget increases.

It is interesting to note that, while it is unlikely that any state university system would use comparisons to prepare a budget today, comparisons are still being made quite regularly. Typically they are used to check on the validity of other budgeting techniques currently employed by the institutions. Such comparisons are helpful in demonstrating to board members or legislators that the actual amounts requested are in line with support received elsewhere.

D. Unit cost formula. The development of library budgets based on unit cost was the forerunner of the Formula Budgeting Technique introduced during the sixties. The unit cost technique was an effort to base the library budget on the work load it carried.

The best example to be found may be the system used by the California state colleges in the mid-50's. In this system the library staffing needs were established by a series of worksheets that translated the workload into staff positions. Such factors were considered as (1) the number of books to be acquired, (2) the number of volumes circulated, and (3) the number of service points to be staffed.³¹

Clearly, the increased use of unit cost data in library budgeting has helped administrators to appreciate the cost of services rendered, much of which was hidden in the past. Over the years the unit cost studies, such as the Axford study, resulted in nationwide understanding of the various elements of library operation.³² The academic library field was ready to translate these cost studies into reliable formulas that were to replace the arbitrary and less scientific budgeting systems, but without getting into the complexities of a true PPB system.

2. Post-1965 formula budgeting. The rapid growth of libraries and their increased cost have been the cause of concern to library administrators, university presidents, legislators and others. It may be easier to comprehend what has happened between the years 1964 and 1974 if one looks at the actual dollar expenditure of a single university library. For the Florida Atlantic University Library the expenditures increased as follows:

<u>Category</u>	<u>Budget</u>	
	<u>1964/65</u>	<u>1974/75</u>
Books and Periodicals	\$150,000	\$ 517,523
Salaries	155,000	509,028
Expenses	<u>30,000</u>	<u>37,399</u>
Total	\$335,000	\$1,063,950

Cost increases of this magnitude are impressive, as well as alarming to some, but their significance lies more in the rate of growth which they represent. Over the past five years the FAU Library has grown at an average annual rate of 20 percent. This growth rate means that the size of the collection doubles every five years. Dix reports similar findings in a survey of fifty-eight university libraries.³³ Dix has identified several library factors, in addition to

general inflation and higher salaries, as the principal causes of this growth:

- A. Increasing enrollments (at least until 1973);
- B. Expansion in scope of teaching and research programs;
- C. Rapid increase in worldwide production of recorded knowledge;
- D. Increase in unit cost of publications considerably in excess of general commodity indexes during the last ten years.

In this climate of growth, formula budgeting appears to be the current trend in academic libraries. Libraries are not only competing with each other for available funds, but they are also competing with the other educational units deserving support. Formulas have been looked at as a management tool that could introduce some equity in the budgeting process. Allen gathered evidence to this effect in his survey of thirteen academic libraries.³⁴

What is a Library Budget Formula?

A library budget formula is defined as a method of line-item budgeting which is based upon quantitative models and which expresses the budgetary support needs generated by operating programs and functions. A formula budget system sets numeric guidelines for fund generation in accordance with accepted standards of adequacy and expected levels of attainment.

Types of Current Formula Approaches

Modern library formulas vary widely in approach, coverage and degree of sophistication. A library formula may cover one or all of the following elements of a budget: a) staff, b) collection, c) other expenses, d) library space (building).

In addition, the formula budgeting technique does not have to be limited to the asking budget. It may include a budget distribution formula of the funds actually received. The most sophisticated budget formula will cover the three basic components of any operational budget (staff, collection, expense) and will have both an asking budget and a distribution model component. At this writing, none of the systems of higher education seem to have a complete formula package that includes all the above.

The Washington Formula, which is widely copied by a number of states, has neither an expense component nor a distribution model.³⁵ The Washington Formula itself consists of the merger of the Clapp-Jordan model³⁶ and a proposed staffing formula for the University of California System.³⁷ The merging of the Clapp-Jordan Formula (for collections) and the California proposal (for staffing) erected one of the most complete library formulas for the State of Washington institutions, followed by the Florida Formula in 1970. The Florida budget generating formula has several antecedents. It is based on a modified Washington formula and it also has a distribution model.

An extensive search for existing formulas in statewide systems has revealed the following criteria:

Group A: Library formula including at least staff and collections

Florida³⁸ (similar to Washington with distribution model)
 Kansas³⁹ (same as Washington)
 Minnesota⁴⁰ (same as Florida)
 Nebraska State Colleges⁴¹ (same as Florida)
 Washington⁴²

Group B: Partial formula (generates library dollars only)

Alabama ⁴³	Arkansas ⁴⁴	Ohio ⁴⁵	South Carolina ⁴⁶
South Dakota ⁴⁷	Texas ⁴⁸	Wisconsin ⁴⁹	California ⁵⁰

Group C: Partial formula (generates library staff only)

Colorado ⁵¹	Illinois ⁵²	Maryland ⁵³	New York ⁵⁴
Utah ⁵⁵	Virginia ⁵⁶		

The adoption of a library formula in a given state doesn't necessarily mean that it is applied to all institutions in the state. For example, as of 1974/75 the Texas Formula has not been applied to the upper division universities in that state.

Summary

In this chapter the evolutionary stages of budgeting methods were described. The development of budgeting practices was reviewed, showing the influence of federal and state governments on educational institutions. Considerable attention was given to PPBS, which promised a great deal to higher education in general and to libraries in particular.

The difficulties in operating the complex PPBS resulted in a drift to formula systems. Currently there is a great deal of activity in the area of budget formula development. This fact alone poses a problem in firmly establishing the state of the art at any given time. The latest known inventory of library formulas used by state systems is reported as of summer 1974. Formula budgeting concepts, if developed properly, represent a great potential for enabling educational leadership to justify library budgets that keep getting larger, and therefore more visible, each year.

Bibliography Chapter 2

- ¹ Bowker Annual, 1974, p.250
- ² Arnett, Trevor. College and University Finance, New York, General Education Board, 1922, pp. 1, 6.
- ³ Stumph, Wayne Julius. A Comparative Study of Statewide Operating Budget Formulas . . . for Higher Education in Selected States. Carbondale, Southern Illinois University, 1970, p. 22.
- ⁴ Morey, Lloyd. University and College Accounting, New York, 1930.
- ⁵ American Council on Education, College and University Business Administration, vol. I, Washington, D.C., ACE 1952, pp. 23, 25.
- ⁶ U.S. Commission on Organization of the Executive Branch of the Government, Fiscal, Budgeting and Accounting Activities, Washington, D.C., Government Printing Office, 1949, p. 8.
- ⁷ Novick, David. Program Budgeting, Cambridge, Harvard University, 1967, p. 86.
- ⁸ Mushkin, Selma. "PPB in Cities." Public Administration Review, 29:167-178, March 1969.
- ⁹ *ibid.*
- ¹⁰ Williams, Harry. Planning for Effective Resource Allocation in Universities. Washington, American Council on Education, 1966. p. 15.
- ¹¹ Farmer, James. Why Planning, Programming, Budgeting Systems for Higher Education? Boulder, Colorado. WICHE, 1970, p. 8.
- ¹² Mosher, Frederick C. "Limitations and Problems of PPBS in the States", Public Administration Review, March-April, 1969, p. 160.
- ¹³ Peterson, Marvin W. "The Potential Impact of PPBS on Colleges and Universities", Journal of Higher Education, vol. 17, January 1971, p. 2.
- ¹⁴ De Genaro, Guy Joseph. "A Planning-Programming-Budgeting System in Academic Libraries". PhD. dissertation. University of Florida, 1971, p. 146.

- 15 Moshier. op.cit. p.162.
- 16 Mason, Thomas R. Program Planning for Research Libraries in a University Setting. Boulder. University of Colorado, 1969. ERIC Doc. ED 027845, p.8.
- 17 *ibid.*
- 18 Allen, Kenneth S. Current and Emerging Budgeting Techniques in Academic Libraries. University of Washington, 1972. ERIC Doc. ED 071726, p.16.
- 19 *ibid.* p.17.
- 20 Booz , Allen & Hamilton, Inc. "Problems in University Library Management". (A study conducted for the Association of Research Libraries and the American Council of Education) Washington, D.C. 1970.
- 21 Axford, H. William. "An Approach to Performance Budgeting at the Florida Atlantic University Library". College & Research Libraries, March 1971, pp.87-104.
- 22 Allen. op.cit. p.18.
- 23 McAnally, Arthur M. "Budgets by Formula". The Library Quarterly, vol.23, April 1963, p.159.
- 24 Standards for College Libraries. American Library Association 1959 (published in College & Research Libraries, July 1959, vol.20, pp.274-280).
- 25 Russell, John Dole. "The Finance of Higher Education". Chicago, University of Chicago Press, 1954, p.137.
- 26 McAnally. op.cit. p.164.
- 27 Southern Association of Colleges and Secondary Schools. Standards of the College Delegate Assembly, Standard Six. Atlanta, 1960.
- 28 McAnally. op.cit. p.165.
- 29 *ibid.* p.165.
- 30 *ibid.* p.166

- 31 California State Department of Education, Division of Budgets and Accounts. State College Libraries. Memorandum AN543, March 8, 1954.
- 32 Axford. op. cit.
- 33 Dix, William. "The Financing of the Research Library". College & Research Libraries, vol. 35, July 1974, p. 255.
- 34 Allen. op. cit. p. 19.
- 35 Interinstitutional Committee of Business Officers. A Model Budget Analysis System for Program 05 Libraries. Evergreen State College. Olympia, Washington, March 1970. ERIC Document ED 051866. 16 pages + appendixes.
- 36 Clapp, Vernon W. and Jordan, Robert T. "Quantitative Criteria for Adequacy of Academic Library Collections", College & Research Libraries, vol. 25, September 1965, pp. 371-380.
- 37 Library Workload Measures. Office of the Vice President for Finance, University of California, Berkeley. 1963. pp. 1-20.
- 38 Explanation of Allocation of 1972-73 Educational and General Appropriation. State University System of Florida. Tallahassee, November 1972.
- 39 Condit, Anna R. Comparison of Washington State and Kansas Approaches to Formulated Budgeting for Libraries. University of Kansas Libraries, Lawrence, September 13, 1972. 7 pages.
- 40 Minnesota State College System Media Directors. A Media Resources and Services Budgetary Analysis and Allocation System for Minnesota Higher Education Institutions: Draft III. MSC Media System, Mankato, September 24, 1973. 9 pages.
- 41 Spyers-Duran, Peter. Proposed Model Budget Analysis System and Quantitative Standards for the Libraries of the Nebraska State Colleges. The Author, Boca Raton, Florida. June 1973. ERIC Doc. ED 077529. 3 pages + appendixes.
- 42 Washington. ED 051866. op. cit.
- 43 Alabama. Commission on Higher Education. Recommended Unified Budget for Post-Secondary Education by Spending Units, 1973-75 Biennium. Appendix A. The Commission. Montgomery. March 1973.

- 44 Arkansas. Department of Higher Education. Section B of 1973-75 budget request. Little Rock: The Department. 1973.
- 45 Ohio. Board of Regents. Program Expenditure Models for Higher Education Budgeting, Book II. Columbus: The Board. 1973.
- 46 South Carolina. Commission on Higher Education. 1974-75 Appropriation Formula. Columbia: The Commission. 1973.
- 47 South Dakota. Regents of Education. Formula Budget for Libraries. Draft. Pierre: The Regents. December 27, 1973.
- 48 Texas. College and University System, Coordinating Board. Policy Paper Nine, Designation of Formulas. Adopted February 6, 1970. 163 pages.
- 49 Wisconsin. University System. 1973-75 Biennial Budget Preparation Guideline Paper, Part 4. Madison: The System. 1973.
- 50 The California State Colleges. Office of the Chancellor. Division of Academic Planning. Report on the Development of the California State College Libraries: A Study of Book, Staffing and Budgeting Problems. Sacramento, November 1970.
- 51 Colorado. Department of Higher Education. Operating Budget Recommendations, 1974-75. Includes Section 3.8, "Libraries and Learning Resources Centers". Denver: The Department. 1973.
- 52 "Guidelines for Junior College Learning Resource Centers Developed in Illinois". Illinois Libraries, 55:65-72. February 1973.
- 53 Bixler, Paul. Maryland Council for Higher Education Library Study: Proposed Library Standards and Growth Patterns for Maryland Public Higher Education Institutions. Baltimore, Maryland Council for Higher Education, 1970. ERIC Doc. ED 046422.
- 54 New York. Advisory Committee on Planning for the Academic Libraries of New York State. Report. Albany: State Education Department. 1973.
- 55 Utah. State Coordinating Council of Higher Education. Financing Higher Education in Utah 1969-1970. Salt Lake City: The Council. January 1969. ERIC Doc. ED 031992. 144 pages.
- 56 Virginia. 1974 Budget Manual, Appendix M. Richmond, 1973.

Chapter 3

THE STUDY

Introduction

Operation of a library within an academic community is generally aimed at achieving a set of institutional goals. Library programs seldom operate without purpose, even though there may be programs for which purposes are obscure.

Management is the process that defines what the program is to accomplish and specifies the methodologies for accomplishing the stated objectives. One of the most important elements in management is planning. The following pages include a discussion of the planning phases of management and the processes for identifying the resources needed to operate the planned program through formula techniques.

Planning is the process through which goals and objectives are identified and the methods of attaining them are described. Justification and value of program planning as described by Ewing¹ indicates that the process would:

1. Lead to a better position for the organization--a means to an end for the operating organization;
2. Help the organization process in ways the management thought best--controlled progress and development;
3. Help management make necessary decisions and act more effectively as goals for the program are sought--give direction to action;
4. Help keep the organization flexible--keep management prepared to take needed actions.

5. Stimulate cooperative, integrated approach to organizational problems.

6. Indicate to management techniques for monitoring progress of programs as it strives to achieve the defined objectives.

7. Lead to socially and economically useful results.

The conclusions drawn from Ewing's seven points are that planning is an essential element in management of complex programs.

Planning is an element that needs to be included in library programs. A library budget formula is a tool that can be utilized in the planning activities. Thus, in selecting the most suitable library budget formula, one must attempt to devise a system that would make the various major operational components of the library visible.

In describing planning, Hartley identifies three major categories: 1) long range--five or more years into the future; 2) medium range--three to five years into the future; 3) short range--the nearest year through two years into the future.²

Planning is a futuristic activity. As such, it brings to bear all available resources for predicting the future objectives of a program to meet the future needs of those calling upon that program. Brong points out that this implies predictions about 1) the demands to be placed on the academic institutions by society at some point in the future; 2) the impact of the institution on that society; 3) the role of the library within the academic institution's programs; 4) the consumption of resources by the institution and its subunits in providing the programs needed to meet the identified objectives.³

The further into the future planning moves, the less precise it becomes. For this reason, the Upper Division University Library Formula to be created for this project will be designed for short range planning activities. The need does exist for a precision tool to predict the required resources to operate a program identified for the next year.

Closely related to program planning is budget planning. The budget follows the program both in sequence of preparation and in content. Budgets are financial expressions of the objectives, activities and programs. Application of a given formula provides an indication of the levels of resources needed to operate a given program.

The use of a formula does not necessarily imply that planning has taken place. One must assume that the process of planning has preceded the application of the formula. Allocation formulas generally provide for an examination of the resources needed to operate a program from the basis that all programs at various institutions are alike. The variables in the existing formulas are usually such things as size of student population, levels of degree programs, number of degree programs, and current size of collections.

Even the best library budget formulas will not solve all the problems administrators face year after year. Some practitioners dislike such systems, because a formula budget tends to remove the budget generation from the librarian to the business manager's office. Schad has expressed two concerns over formula budgeting: 1) they typically ignore the specific needs of the collection and 2) the attitudes of those controlling the program with the formula seem dominant.⁴

While the imperfection of known formulas is acknowledged, we must accept the fact that libraries are probably better off with imperfect formulas than with none at all. The debate, however, is purely academic; because the formulas are here to stay as long as governing bodies demand accountability. As the demand for accountability seems to be on the rise, improvement of the existing formulas appears to be the only reasonable course of action.

Objectives

The primary objective of this study was to develop and recommend a model library budget formula for upper division university libraries. It was found that the following formula components covered all major budgets commonly found in academic libraries: 1) material funds (books, periodicals, etc.); 2) personnel (professional and clerical); 3) expense (supplies, travel, etc.). A survey of physical facilities formula was excluded from the model formula, since physical facility funds is typically not part of this annual operating budget.

The secondary important objective of the proposed model formula will be to serve as a short range planning tool for institutions.

The scope of the study was limited to Formula Budgeting, defined as a method of line item budgeting based upon quantitative models which express the budgetary support needs generated by operating programs and functions. Such a system sets numeric guidelines for fund allocations relative to accepted standards of adequacy and accepted levels of attainment.

Delimitations of the Study

The delimitations of the research study were:

1. The study was limited to the examination and development of a library formula budget to be used by upper division universities existing in state systems.
2. The model was tested by select institutions considered representative of other upper division universities.
3. Although non-state-supported upper division universities or institutions not part of a system may find this formula application useful, this study was not focused on their needs.
4. The formula was limited to the following major operating budget elements: a) materials, b) personnel, c) expense.

Excluded from the study was any discussion of library space formulas on grounds that operating budgets seldom, if ever, include capital (building) funds.

Assumptions

1. Formula budgeting can be applied to all state supported upper division universities existing in a system with reasonably acceptable results.
2. A budget formula suitable to the upper division universities can be an effective administrative tool for an equitable resource allocation among institutions in a system.
3. A budget formula suitable to the upper division universities can be an effective administrative tool for making wise educational plans.
4. Effective administration of the nation's upper division university libraries necessitates that funding needs are clearly and easily analyzed through a reliable budget formula.
5. In terms of long-range benefits the budget formula will improve the level of support the libraries will receive.
6. A budget formula designed for upper division university libraries will recognize the special needs of this type of institution.
7. It may be unnecessary to "invent" an entirely unique formula for upper division libraries. Testing of select formulas may prove them to be, with or without some modification, the desired model for all libraries.

Procedures in the Development of the Formula

This study was a developmental research project. The search and development for the Upper Division University Library Formula by this investigator progressed through six phases.

Phase One: Generalizations and guidelines in the literature dealing with library formula budgeting were identified. Existing library formulas were evaluated in terms of their usefulness to the upper division university libraries. Based on this evaluation, formula elements and techniques were classified and either retained or discarded for the purposes of the development of the Upper Division University Libraries (UDUL) Formula.

Phase Two: Through a questionnaire library data were collected from state-supported upper division university libraries which are also part of a statewide system.

Phase Three: Existing formulas were selected for inclusion in the study and in the UDUL Formula.

Phase Four: Ten upper division university libraries were used to test the formulas. Institutional data gathered from the questionnaires served as a source of information.

Phase Five: The final product, consisting of a budget generation formula, was evaluated by a panel of experts. The panel of experts consisted of the members of the Committee on Upper Division Universities of the American Library Association and directors of libraries from the participating institutions.

Phase Six: Conclusions were drawn and recommendations were made concerning the feasibility and utilization of applying the UDUL Formula.

Other Studies Utilizing Developmental Research Techniques

The following five dissertations will be discussed here because they have used developmental research techniques in budgeting systems for higher education. The research techniques employed by these

dissertations provided the author with support of the methodology and design used in the execution of this study on library formula budgeting.

1. Stumph⁵ collected publications, reports, statistics and other pertinent data on statewide operating budget formulas from ten states. The data were analyzed and compared with each other, leading to the selection or derivation of appropriate factors to be considered in planning and developing a scientific budget formula and tailoring it to the needs of a state using a coordinating board system. The author relied heavily on interviews and correspondence. The various formulas currently in use are discussed in detail. Stumph selected one best suited and presented it as a plan for acceptance. In the selection of the formula he employed the following criteria:

- A. Is the formula element appropriate to the specific activity to be measured?
- B. Is it simple to apply to a comprehensive situation?
- C. What is its potential for contribution to efficiency and economy in allocating resources?

The plan developed by Stumph was reviewed by an expert, Robert A. Pringle, then Assistant Director, Operating Budgets of the Illinois Board of Higher Education.

2. MacKeraghan's⁶ study set out to determine whether a conceptual planning-programming-budgeting system model could be developed for a community college. The model sought to provide a method of identifying the costs of community college programs for use by educational decision-makers in the rational allocation of its fiscal resources.

The study's four phases included: a) identification of educational PPBS generalizations and guidelines from a search of the literature; b) development of a conceptual PPBS model for a com-

munity college based on such generalizations and guidelines; c) analysis of the conceptual PPBS model as an administrative concept at a selected Florida community college, within the institution's existing communication, accounting, budgeting and decision-making procedures; d) development of conclusions and recommendations concerning the use of the conceptual PPBS model in Florida's community colleges.

MacKeraghan applied his PPBS model to a single Florida junior college, making it difficult to draw broad generalizations for applicability to other junior colleges.

3. The Wilson⁷ study was accomplished by means of:

a) a review and analysis of literature; b) acquisition of information about planning-programming-budgeting systems from states, counties, cities, governmental agencies and industry; c) acquisition of information about the application of planning-programming-budgeting systems in education; and d) development of a handbook for PPBS in education.

The purposes of this study were: a) to investigate the origin, history and educational application of planning-programming-budgeting systems; b) to identify the major factors involved in establishing such a system; and c) to develop a handbook for planning-programming-budgeting systems for administrators, boards of education, professors and students in education, supervisors, principals, teachers, and other persons who would be involved in the adoption and implementation of PPB systems in education.

Following a review of planning-programming-budgeting systems in education reported in the available literature, an analysis of the materials and manuals available was completed. From this background information, a handbook was developed to meet the needs of those planning to adopt a PPB system in education.

Assistance with the format of the handbook for planning-programming-budgeting systems was obtained from Dr. Stirling B. Williams, Jr. of the Memphis City Schools, who had previous experience in developing handbooks for school personnel. Dr. Donald R. Thomsen, Assistant Project Director of the Research Corporation of the Association of School Business Officials, Chicago, Illinois, checked the handbook for accuracy of content. Changes suggested by these specialists were incorporated into the handbook. The handbook appears as the Appendix of his study.

4. Fischer⁸ advanced the concept that community colleges need new systems for effective and efficient utilization of scarce resources. The general purpose of the study was to develop an operational model of a program budgeting system (PBS) which would make it possible for community colleges to implement program budgeting. The model which was developed in the form of a systems manual was a result of the procedural steps taken in response to the research questions listed for each step. These procedural steps included:

- a) the development of PBS criteria from a review of the literature;
- b) an in-depth study of a typical county-sponsored community college;
- and c) the development of an operational model to overcome the differences between a typical community college and the PBS criteria.

The model was then reviewed in community colleges sponsored by other than a county and modified to reflect these differences. A national panel was requested to evaluate the usefulness and general applicability of the model to other community colleges in the nation.

5. Hoong⁹ developed a model for a prediction formula for determining resources necessary to operate a defined higher education audiovisual center program. To accomplish this the following objectives were met:

A. Create a listing of descriptive statements representing all components of audiovisual programs that might exist; arrange the component listing into a catalog from which program components could be selected.

B. Create a series of formula elements and mathematical statements, matched to the program components, that could be used to predict collection sizes, personnel requirements, or monies necessary to operate the defined program.

Higher education audiovisual center programs were assumed to be extremely diverse operations. The range of programming areas that might be operated could include but not be limited to: materials collection development and management, materials production, instructional design and curriculum development, equipment services, research, professional association activities, and institutional development.

The formula developed was applied against six state-supported four-year institutions in the State of Washington. The acceptability of the formula was based on its ability to adequately predict the resources needed to operate the six Washington State programs. Adequacy was determined by the program directors and an advisory panel.

Conclusions drawn from the study indicated that the approach used in formula resources prediction was applicable to planning and budgeting processes in use in 1972. The specific formula developed was found to provide acceptable predictions for audiovisual center programs in many operational areas, and it was concluded that it could serve as a model for further formula development in the audiovisual center program areas.

Summary

This developmental research project had two objectives. First, it developed a model budget formula for upper division university libraries. Second, it proposed that the formula, once developed, should be able to express the budgetary needs of an institution and should serve as a satisfactory short-range planning tool for management. Although the project was limited to state institutions serving in a system, other institutions may find the formula application useful.

The six phases of the study represented the key to the successful completion of the project. Phases one to three consisted of literature search, data collection, and examination and evaluation of existing formulas. Phases four and five consisted of testing formulas selected for use and the evaluation of results by a panel of experts from leading upper division university libraries. Phase six included conclusions and recommendations concerning the feasibility and value of applying a formula suitable for upper division university libraries.

Five recent doctoral dissertations were reviewed in this chapter, all of which used developmental research techniques in budgeting systems for higher education. The research techniques employed by these dissertation authors supported the methodology and design used in the development of this study on library formula budgeting.

Bibliography Chapter 3

- ¹Ewing, David W. "The Practice of Planning". New York: Harper & Row, 1968, pp.9-14.
- ²Hartley, Harry J. Educational Planning-Programming-Budgeting. A Systems Approach. Prentice Hall, 1968, p.23.
- ³Brong, Gerald R. A Resources Prediction and Allocation Model for Audio-Visual Centers in Higher Education. Washington State University, Ed.D. dissertation, 1972, p.25.
- ⁴Schad, Jasper. "Allocating Book Funds: Control or Planning?". College & Research Libraries. May 1970, p.23.
- ⁵Stumph, Wayne Julius, 1931. A Comparative Study of Statewide Operating Budget Formulas Administered by Statewide Coordinating Agencies for Higher Education in Selected States. Southern Illinois University, Ph.D. dissertation, 1970.
- ⁶MacKeraghan, Lysle Robert, 1929. A Conceptual Planning-Programming-Budgeting Model for a Community College. University of Florida, Ed.D. dissertation, 1970.
- ⁷Wilson, Herbert Wayne, 1934. The Development of a Handbook for Planning-Programming-Budgeting Systems in Education. University of Mississippi, Ed.D. dissertation, 1971.
- ⁸Fischer, William Burke, 1929. A Program Budgeting PPBS Sub-system Operational Model for Community Colleges. State University of New York at Buffalo, Ed.D. dissertation, 1972.
- ⁹Brong, Gerald R. A Resources Prediction and Allocation Model for Audio-Visual Centers in Higher Education. Washington State University, Ed.D. dissertation, 1972.

Chapter 4

ADMINISTERING THE STUDY AND THE DEVELOPMENT OF UDUL FORMULAS

The Questionnaire

An analysis of library programs in upper divisional settings was considered basic in the development of the formula. The objective of the questionnaire was to provide for analysis an examination of existing library programs. The questionnaire addressed the following topics:

1. Library programs and functions carried out during 1973/74;
2. Type of budgeting methods used and extent of operating funds;
3. General statistics on library operations during the 1973/74 academic year.

A draft of the questionnaire was mailed to members of the American Library Association, Association of College & Research Libraries Committee on Upper Division University Libraries (UDUL)¹ for their comments and evaluation. Their remarks were incorporated in the final version of the questionnaire (see Appendix I).

The basic mailing list for the questionnaire was the membership list from the Association of Upper Level Colleges and Universities. Dr. Robert Altman² was consulted before the final mailing was prepared. It was assumed that he would be aware of any additional upper level universities that might not have membership in the Association.

Altman identified two such institutions, Monterey Institute of Foreign Studies and Anchorage Senior College of the University of Alaska system, both of which were added to the mailing list.

The questionnaire was mailed to twenty-eight institutions representing 100 percent of upper level colleges and universities (see Appendix II). The institutions surveyed included twenty state-supported universities, one city college and seven private schools. Enclosed with the questionnaire were, 1) a letter describing the purpose of the project and 2) a return memorandum which enabled an individual to express his/her interest in participating in the development of the model budget formula (see Appendixes III and IV). Twenty-four of the twenty-eight institutions responded to the questionnaire.

Selection of the Expert Panel

The Expert Panel³ was selected from among those library directors who expressed an interest in evaluating the proposed formula. The Expert Panel serves, in addition, the members of the ALA, ACRL, UDUL Committee and provides the broadest possible exposure of this research project among those who might be able to use the results. Although the primary objective of this project was to develop a model formula for upper division university libraries serving in a state system of higher education, it was assumed that once the formula was developed, it might also be useful to non-state-supported institutions. For this reason the Expert Panel included individuals from both private and public sectors.

Selection of Institutions for Field Testing Formulas

There was general consensus among the Expert Panel members that the institutions selected should provide a representative base for field testing the formulas. The following criteria were set to help

with the selection process:

1. The library should have at least 120,000 volumes;
2. The annual budget should be not less than \$300,000;
3. There should be some evidence of institutional stability and maturity;
4. The institution should be tax-supported.

A high percentage of the upper division universities are still so new that they operate under unusual start-up conditions. The first three criteria were designed to eliminate from field testing those institutions which could distort the results by the unusual start-up conditions so typically employed in such cases. Nine state institutions qualified for the field testing. A city college was added as the tenth institution for the field test group under the assumption that the model library budget formula may be of assistance to non-state-supported upper division libraries.

The Ten Institutions Used in the Field Test		
Code	Institution	Location
A	Sangamon State University	Springfield, Ill.
B	Governors State University	Chicago, Ill.
C	Florida International University	Miami, Fla.
D	University of West Florida	Pensacola, Fla.
E	University of North Florida	Jacksonville, Fla.
F	Florida Atlantic University	Boca Raton, Fla.
G	Penn State-Capital	Middletown, Pa.
H	Univ. of Texas-Permian Basin	Odessa, Tex.
I	University of Texas-Dallas	Dallas, Tex.
J	Richmond College	Staten Island, N. Y.

Figure 1. Code Designation for Test Institutions

The ten institutions represent five states. Florida is represented with twice as many institutions as the others, the result of the function of age and maturity of the upper division university movement which developed earlier in Florida than in other states.

Discussion of Institutional Data for Field Test Groups

The ten institutions selected for field testing have a rather interesting profile. As Table I shows, their collection size ranges from 120,000 to 363,853 volumes. FTE student body ranges from an enrollment of 398 to 6,625. During 1973/74 the smallest library operating budget was \$341,416, while the largest was over \$1.2 million. Nine of the ten schools have master level programs and the tenth one has approval to start several such programs next year. Only the University of Texas-Dallas and Florida Atlantic University offer doctoral level programs; however, several schools expect to add doctoral programs in time. The level and number of graduate programs was considered by all respondents to be an important variable in any formula.

The distribution of FTE staff between public services and technical services may reflect both workload and institutional orientation toward either service or support functions. The smallest staff of 14.5 FTE was noted as totally inadequate by Richmond College.

Other programs affecting workloads were considered in collecting institutional data. Certainly, interlibrary loans are a workload factor that every library absorbs. There were two institutions which did not report their interlibrary loan statistics even though they provide this service. The registered outside borrowers can also be a factor if a library is involved in major community service. The degree of such involvement in the test group was quite mixed, making it difficult to arrive at any conclusion.

TABLE I

INSTITUTIONAL DATA FOR SELECT UPPER DIVISION UNIVERSITY LIBRARIES, 1973/74

	Sangamon State (A)	Governors State (B)	Florida Int'l. Univ. (C)	Univ. of West Fla. (D)	Univ. of North Fla. (E)	Florida Atlantic Univ. (F)	Penn State -Capitol (G)	Un. Texas/ Permian Basin (H)	Un. Texas/ Dallas (I)	Richmond College (J)
1. No. Volumes	170,513	144,445	179,463	262,692	150,417	261,053	120,000	137,510	195,185	363,853
2. No. FTE Faculty	176	140	422	206	155	290	130	67	50	175
3. FTE Students by level:										
a. Jr./Sr. (300/400)	1,372	980	6,120	2,839	2,103	3,800	1,350	673	-0-	2,145
b. Beg. Grad. (500)	-0-	-0-	242	738	254	500	325	-0-	-0-	685
c. Master (600)	668	1,020	263	-0-	-0-	500	-0-	139	305	-0-
d. Doctoral (700)	-0-	-0-	-0-	-0-	-0-	100	-0-	-0-	93	-0-
Total FTE Students:	2,040	2,000	6,625	3,637	2,357	4,900	1,675	812	398	2,830
4. No. Registered Outside Users	116	312	310	3,400	243	2,400	-0-	170	218	-0-
5. Program Count:										
a. # MA w/o doctoral	17	19	39	15	5	19	8	8	8	-0-
b. # MA with doctoral	-0-	-0-	-0-	-0-	-0-	2	-0-	-0-	3	-0-
c. # Doctoral	-0-	-0-	-0-	-0-	-0-	2	-0-	-0-	8	-0-
6. FTE Staff:										
a. Technical svcs	23	27	23.74	21	no such	19.5	9	10	12.5	8
b. Public services	18	21	24	17	allocations	31.7	9	11	11	6.5
Total Staff:	41	48	48.74	38	37.5	51.2	18	21	23.5	14.5
7. No. Interlibrary Loan Transactions	2,072		2,097	1,773	932	5,800	2,500	1,890	2,660	
8. Budget History 1973/74:										
a. Salaries	\$396,496	\$ 470,373	\$ 458,320	\$297,228	\$285,392	\$ 491,417	\$141,416	\$173,000	\$ 269,316	\$252,018
b. Wages (hourly)	70,558	40,000	109,548	16,877	28,843	17,611	20,000	N/A	-0-	-0-
c. Materials (books, journals, etc)	373,115	542,288	538,936	274,480	392,160	517,523	152,000	600,000	885,876	150,315
d. Expense (travel, supplies, etc)	89,106	89,082	45,525	22,358	25,359	37,399	18,000	27,000	52,200	56,699
Total Budget:	\$929,247	\$1,141,743	\$1,180,623	\$610,843	\$731,754	\$1,063,950	\$341,416	\$800,000	\$1,207,392	\$429,032

Selection of Existing Library Formulas

A number of library formulas were examined to determine their probable usefulness in developing a new or modified formula suitable for UDUL purposes. In order to eliminate incomplete formulas, the following selection criteria were established:

1. The staffing formula should

- A. address itself to both public and technical services staff needs;
- B. be able to respond to increasing or decreasing workload in these two basic divisions of library service;
- C. be part of a formula package serving state systems which also has collection development formulas available.

2. The materials formula should

- A. reflect the need for a basic collection of at least 75,000 volumes;
- B. relate the size of the collection to the size of the student body;
- C. be responsive to the diversity and complexity of graduate programs.

3. Expense formula. There was no expense formula available at the outset of this project. It was established, however, that an expense formula was desirable and that one should be designed. The design of the expense formula will be discussed later.

Based on the above criteria, the California Formula, the Florida Formula and the Washington Formula were selected for their ability to predict library needs in an upper division setting.

The Kansas Formula was eliminated because it is the same as the Washington model. Similarly, the Minnesota and Nebraska formulas were discarded because they are basically the same as the Florida model. Also eliminated were partial formulas used by about

fourteen other states because they did not meet the stated criteria. A complete list of the formulas evaluated is found in Chapter 2, pages 28 and 29.

1. Staffing formula. The following pages will consider the ten institutions tested both individually and as a hypothetical group of libraries serving a single state system of higher education. The California, Florida and Washington staffing formulas will be first described and then applied to the ten institutions to show how each would be affected. This section includes the following tables of interest:

Table II.	California Staffing Formula Description
Table III.	California Staffing Formula Applied to Institutions
Table IV.	Florida Staffing Formula Description
Table V.	Florida Staffing Formula Applied to Institutions
Table VI.	Washington Staffing Formula Description
Table VII.	Washington Staffing Formula Applied to Institutions
Table VIII.	Proposed UDUL Staffing Formula Description
Table IX.	Proposed UDUL Staffing Formula Applied to Institutions
Table X.	Summary of Staffing Formulas
Table XI.	Comparative Group Analysis

A. The development of the UDUL Staffing Formula .

An analysis of

the results of the California, Florida and Washington formulas revealed some useful basic concepts. The Washington type model was preferred over California because it recognized the increased complexities of book processing associated with larger collection size. The formulas tested have shown a dramatic discrepancy between existing staffs and the staffs these formulas have generated. Nine out of ten institutions stated that they would like to have some additional staff. At the same time it was assumed that any formula asking for unreal-

istic staff increases would not be taken seriously by the funding authorities. Keeping this in mind, the UDUL formula adopted the concepts of the Washington staffing formula but also introduced moderating influences that reduced the total staff generated. This turned out to be an acceptable model, accomplishing its objective by manipulating the constants.

If one considers the ten institutions as a single group serving a single hypothetical system of higher education, it is possible to study the impact of the four formulas (see Table XI, p. 63). The total actual staff employed amounts to 342.4 FTE. The most extreme results are obtained from the Washington model that suggests 650.6 FTE, representing an additional 308.2 FTE staff for these institutions, or 90 percent increase. The Florida and California models would increase the group total staff to 55 and 51 percent respectively.

The proposed UDUL formula increases the total new staff demand by only 19.7 percent. In looking at the test results of the individual institutions (Table X), it appears that three of the institutions are staffed above the UDUL formula. It must be remembered, however, that all libraries employ students and other hourly wage earners. The formula recommends that not less than 15 percent of the FTE staff be added in the form of hourly wage employees. This added labor force will bring each institution within a realistic range of planning for library staffing.

B. Recommended conversion of UDUL
formula generated staff to dollars. The UDUL

formula generates minimum staff needs only. The number of positions do not represent support for any special project a library may wish to inaugurate or for branch library operations. Similarly, it does not propose to generate support for media center type services such as audio-visual, TV or graphics. There are standards and formulas published for these activities that should be considered for institutional

TABLE II

CALIFORNIA STATE COLLEGE LIBRARIES STAFFING FORMULA1. Basic Allowance per Projected total FTE faculty & students

A)	3 positions	new, unopened college
B)	5 "	less than 1,601
C)	7 "	1,601 - 6,250
D)	8 "	6,251 - 10,800
E)	9 "	10,801 - 15,000
F)	10 "	greater than 15,000

$$2. P_1 = \frac{a}{b} + e$$

P_1 = number of public service area positions authorized

a = average weekly hours projected to be devoted to all circulation activities related to charged materials functions by professionals, non-professionals and student assistants.

b = 40 hours per week

e = one position for projected increase or decrease of each 12,000 volumes charged or 70,000 volumes reshelfed of non-charged materials.

(factors c and d omitted; they relate specifically to the Cal. system)

$$3. P_2 = \text{total FTE faculty and students divided by 750.}$$

$$4. P_3 = \text{special clients and graduate students divided by 500.}$$

$$5. \text{Technical Services} = \text{number of volumes processed divided by 950.}$$

$$6. \text{Managerial/Administrative based on number of employees}$$

A)	2 M/A positions	up to 15
B)	3 "	16 - 25
C)	4 "	26 - 35
D)	5 "	36 - 50
E)	6 "	51 - 70
F)	7 "	71 - 110
G)	8 "	111 - 160
H)	9 "	161 - 220
I)	10 "	over 220

TABLE III
CALIFORNIA STATE COLLEGES STAFFING FORMULA
APPLIED TO TEST INSTITUTIONS

	A	B	C	D	E	F	G	H	I	J
1. <u>Basic Allowance</u>	7	7	8	7	7	7	7	5	5	7
Public Services										
2. $P_1 = \frac{a}{b} + e \left\{ \frac{90}{40} + 5.10 \right\}$ a = 90 av. hrs/wk b = 40 hrs/wk e = 1 pos./ea. increase of 12,000 vols. charged (30 vols x total FTE students)	7.35	7.25	18.81	11.34	8.14	14.50	6.44	4.28	3.25	9.33
3. $P_2 = \text{total FTE faculty \& students} \div 750$	2.95	2.85	9.40	5.12	3.35	6.92	2.41	1.17	.60	4.01
4. $P_3 = \text{registered outside users} + \text{grad. stud.} \div 500$	1.57	2.66	1.63	8.28	.99	7.00	.65	.62	1.23	1.37
Technical Services										
5. TS = No. vols processed $\div 950$	21.23	30.85	30.66	15.62	22.31	29.45	9.22	34.14	50.41	8.55
6. Management/Admin. based on No. of staff	5	5	5	5	5	6	3	3	3	2
7. Formula Total Staff	45.10	55.61	73.50	52.36	46.79	70.87	28.72	48.21	53.49	32.26
8. Staffing Deficiency (Formula to Actual)	4.10	7.61	23.76	14.36	9.23	19.67	10.72	27.21	39.69	17.76

TABLE IV

FLORIDA STATE UNIVERSITY LIBRARIES STAFFING FORMULA

A. Public Services (including pro rata share of library administration)

- | | | |
|----|---|-----------------------------|
| 1. | <u>Number of FTE Students</u> | <u>Multiplied by Weight</u> |
| | 300/400 level | x 1.76 |
| | 500 level | x 2.05 |
| | 600/700 level | x 4.76 |
| | registered outside users | x 1.00 |
| 2. | Determine total weighted enrollment;
divide by a factor of 300 to derive
<u>formula FTE Public Services Staff</u> | |

B. Technical Services (incl. pro rata share of library admin.)

	<u>Process Formula</u>	and	<u>Descriptive Example</u>																					
Step 1:	To the total units held at beginning of year <u>Add the number of units of library resources</u> <u>estimated to be added in year to which</u> <u>calculation applies</u>		261,153 <u>23,501</u> 284,654 (1)																					
Step 2:	<u>Multiply Result by Units to be Added (UA)</u>		<u>x 23,501</u> 66,896,536 (2)																					
Step 3:	<u>Divide by 1,000,000 to derive</u> <u>Weighted Units to be Added (WUA)</u>		<u>÷ 1,000,000</u> 6,689.65 (3)																					
Step 4:	<u>Multiply WUA by the factors that apply:</u>		<u>x .01514</u> (4)																					
	<table><tr><th colspan="3"><u>W U A</u></th><th><u>Factor</u> <u>(Step 4)</u></th><th></th><th><u>Constant</u> <u>(Step 5)</u></th></tr><tr><td>1 to 14,999</td><td>x</td><td>.01514</td><td>+</td><td>67</td></tr><tr><td>15,000 to 41,999</td><td>x</td><td>.00664</td><td>+</td><td>194</td></tr><tr><td>42,000 to 300,000</td><td>x</td><td>.00360</td><td>+</td><td>322</td></tr></table>	<u>W U A</u>			<u>Factor</u> <u>(Step 4)</u>		<u>Constant</u> <u>(Step 5)</u>	1 to 14,999	x	.01514	+	67	15,000 to 41,999	x	.00664	+	194	42,000 to 300,000	x	.00360	+	322		101.28 (4)
<u>W U A</u>			<u>Factor</u> <u>(Step 4)</u>		<u>Constant</u> <u>(Step 5)</u>																			
1 to 14,999	x	.01514	+	67																				
15,000 to 41,999	x	.00664	+	194																				
42,000 to 300,000	x	.00360	+	322																				
Step 5:	To the Result of Step 4 <u>Add the applicable constant as given above</u> <u>to obtain the Factor Resulting (FR)</u>		<u>+ 67</u> (5) 168.28 (FR)																					
Step 6:	<u>Divide WUA (step 3)</u> <u>by Factor Resulting (FR, step 5)</u> <u>to derive formula FTE Technical Services Staff</u>		<u>÷ 168.28</u> <u>39.75</u> (6)																					

TABLE V

FLORIDA STAFFING FORMULA APPLIED TO TEST INSTITUTIONS

		A	B	C	D	E	F	G	H	I	J
A. PUBLIC SERVICES											
FTE Students											
Level	No. x Weight										
300/400	# x 1.76	2,414.7	1,724.8	10,771.2	5,102.2	3,701.3	6,688	2,376	1,184.5	-0-	3,775.2
500	# x 2.05	-0-	-0-	496.1	1,512.9	520.7	1,025	666.3	-0-	-0-	1,403.3
600	# x 4.76	3,179.7	4,855.2	1,231.9	-0-	-0-	2,380	-0-	661.6	1,451.8	-0-
700	# x 4.76	-0-	-0-	-0-	-0-	-0-	475	-0-	-0-	442.7	-0-
Total Weighted Enrollment		5,594.4	6,580.0	12,519.2	6,615.1	4,222.0	10,569.0	3,042.3	1,846.1*	1,594.5	5,179.5
Divided by 300 =											
Total FTE Generated Public Services Staff		18.7	21.9	41.7	22.1	14.1	35.2	10.2	6.2	6.3	17.3
B. TECHNICAL SERVICES*											
Step 1 through Step 6 formula details are identical to Washington Formula to obtain											
Total FTE Generated Tech. Services Staff		30.7	35.3	38.2	31.8	29.8	42.7	13.4	40.8	47.9	26.8
C. TOTAL FTE GENERATED LIBRARY STAFF (A + B)											
		69.4	57.2	79.9	53.9	43.9	77.9	23.6	47.0	54.2	44.1
D. STAFFING DEFICIENCY or (OVER FORMULA)											
		8.4	9.2	30.2	15.9	6.4	26.7	5.6	26.0	30.7	28.6

*See formula and example under "Florida Formula", Table IV.

TABLE VII

WASHINGTON STAFFING FORMULA APPLIED TO TEST INSTITUTIONS

A		B	C	D	E	F	G	H	I	J
A. PUBLIC SERVICES*										
FTE Students										
Level	No. x Weight									
300-400	# x 1.80	2,470	1,764	11,016	5,213	3,795	6,340	2,430	1,211	3,851
500	# x 4.30	-0-	-0-	1,041	3,173	1,032	2,150	1,356	-0-	2,946
600	# x 6.00	4,003	6,120	1,578	-0-	-0-	3,000	-0-	834	-0-
700	# x 6.00	-0-	-0-	-0-	-0-	-0-	600	-0-	-0-	-0-
Total Weighted Enrollment		6,473	7,884	13,635	8,391	4,827	12,560	3,828	2,045	9,807
Divided by 220 equals										
Total FTE Generated										
Public Services Staff		29.4	35.8	62	38.1	22.2	57.2	17.4	9.3	30.5
B. TECHNICAL SERVICES*										
Step 1:										
Units held		170,513	144,445	179,463	262,892	150,417	261,033	120,000	187,510	363,232
plus units to be added (VA)		20,169	29,212	29,131	14,836	21,197	27,974	8,755	32,432	47,895
Equals		190,681	173,757	208,594	277,728	171,614	288,007	128,755	219,942	371,973
Step 2:										
Total x UA		3,845,654,403	5,093,163,184	6,076,551,514	4,117,403,408	3,637,701,933	8,085,241,298	1,127,387,535	7,133,158,944	11,533,405,950
Step 3:										
÷ 1,000,000 equals										
WUA		3,845	5,093	6,077	4,117	3,638	8,085	1,127	7,133	11,539
Step 4:										
WUA x .01514 =		58.2	77	92	62.3	55	122.4	17	108	176.2
Step 5:										
Plus constant (67) =		67	67	67	67	67	67	67	67	67
Factor Resulting (FR)		125.2	144	159	129.3	122	189.4	84	175	243.2
Step 6:										
WUA		3,845	5,093	6,077	4,117	3,638	8,085	1,127	7,133	11,539
Divided by FR equals		30.7	35.4	38.2	31.6	29.8	42.7	13.4	40.8	47.9
Total FTE Generated										
Tech. Services Staff		30.7	35.4	38.2	31.6	29.8	42.7	13.4	40.8	47.9
C. TOTAL FTE GENERATED										
LIBRARY STAFF (A + B.6)		60.1	71.2	100.2	69.9	52	99.9	30.8	50.1	57.7
D. STAFFING DEFICIENCY or (OVER FORMULA)										
		19.1	23.2	50.5	31.9	14.5	48.7	12.8	23.1	35.3

* See full instructions and descriptive example for Public Services and Technical Services staffing under "Washington Formula", Table VI.

TABLE VIII

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PROPOSED
UPPER DIVISION UNIVERSITY LIBRARIES STAFFING FORMULA*

A. <u>Public Services</u> (including pro rata share of library administration)			
1.	<u>Number of FTE Students</u>	<u>Multiplied by Weight</u>	
	300/400 level	x	1.76
	500 level	x	2.05
	600 level	x	4.76
	700 level	x	4.76
2.	a. Determine total Weighted Enrollment (WE).		
	b. Divide up to first 7,000 WE by a factor of <u>300</u> .		
	c. Divide WE in excess of 7,000 by a factor of <u>450</u> .		
	d. Add results of b. and c. to derive total formula <u>FTE Public Services Staff.</u>		
B. <u>Technical Services</u> (including pro rata share of library admin.)			
	<u>Process Formula</u>	and	<u>Descriptive Example</u>
Step 1:	To the <u>total units held at beginning of year</u> <u>Add number of units of library resources</u> <u>estimated to be added in year to which</u> <u>calculation applies.</u>		261,053 <u>27,974</u> 289,027 (1)
Step 2:	<u>Multiply Result by Units to be Added (UA)</u>		x 27,974 8,085,241,298 (2)
Step 3:	<u>Divide Result by 2,000,000 to derive</u> <u>Weighted Units to be Added (WUA)</u>		÷ 2,000,000 4,042.62 (3)
Step 4:	Multiply WUA by the factors that apply:		x .03028 (4)
	<u>W U A</u>	<u>Factor</u> (Step 4)	<u>Constant</u> (Step 5)
	1 to 14,999 x	.03028 +	30
	15,000 to 41,999 x	.01328 +	97
	42,000 to 300,000 x	.00720 +	161
Step 5:	To the Result of Step 4 Add the applicable <u>constant</u> as given above to obtain the <u>Factor Resulting (FR)</u>		122.41 (4) + 30 (5) 152.41 (FR)
Step 6:	Divide WUA (step 3) by Factor Resulting (FR, step 5) to derive formula FTE Technical Services Staff		4,042.62 ÷ 152.41 26.52 (6)

* Not including hourly wages. For hourly wages add 15% of staff generated.

TABLE IX

UPPER DIVISION UNIVERSITY LIBRARIES STAFFING FORMULA
APPLIED TO TEST INSTITUTIONS

										A	B	C	D	E	F	G	H	I	J
A. PUBLIC SERVICES																			
1. FTE Students																			
Level No. x Weight																			
300/400 # x 1.75										2,414.7	1,724.8	10,771.2	5,102.2	3,701.3	6,688	2,376	1,184.5	-0-	3,775.2
500 # x 2.05										-0-	-0-	495.1	1,512.9	520.7	1,025	666.3	-0-	-0-	1,404.3
600 # x 4.76										3,179.7	4,855.2	1,251.9	-0-	-0-	2,380	-0-	661.6	1,451.8	-0-
700 # x 4.76										-0-	-0-	-0-	-0-	-0-	476	-0-	-0-	442.7	-0-
2. Total Weighted																			
a. Enrollment (WE) =										5,594.4	6,530.0	12,519.2	6,615.1	4,222.0	10,569	3,042.3	1,846.1	1,894.5	5,179.5
b. First 7000 WE ÷ 300 =										18.7	21.9	23.3	22.1	14.1	23.2	10.1	6.2	6.3	17.3
Excess of										-	-	12.3	-	-	7.9	-	-	-	-
c. 7000 WE ÷ 450 =										-	-	-	-	-	-	-	-	-	-
d. Total FTE Generated																			
Public Services Staff										18.7	21.9	35.6	22.1	14.1	31.3	10.1	6.2	6.3	17.3
B. TECHNICAL SERVICES*																			
Step 1:																			
Units Held										170,513	144,445	179,463	262,632	150,417	261,053	120,000	187,510	195,185	363,853
Plus units to be added (UA)										20,168	29,312	29,131	14,836	21,197	27,974	8,756	32,432	47,885	8,125
Equals (total)										190,681	173,757	208,594	277,528	171,614	289,027	128,756	219,942	243,070	371,978
Step 2:																			
Step 1 Total x UA																			
Step 3:																			
Step 2 Total ÷ 2,000,000										1,922.8	2,545.6	3,038.3	2,058.7	1,818.9	4,042.6	563.7	3,566.6	5,819.7	1,511.2
Equals WUA																			
Step 4: WUA x factor .03028 =										58.2	77.1	92.0	62.3	55.1	122.4	17.1	108.0	178.2	45.8
Step 5: Plus constant (30)										30	30	30	30	30	30	30	30	30	30
Equals Factor Resulting (FR)										88.2	107.1	122.0	92.3	85.1	152.3	47.1	138.0	206.2	75.8
Step 6: WUA ÷ FR = Total FTE																			
Generated Tech. Services Staff										21.8	23.6	24.9	22.3	21.4	25.5	11.9	25.8	28.2	19.9
C. TOTAL FTE GENERATED																			
LIBRARY STAFF (A.2+B.6)**										40.5	45.7	60.5	44.4	35.5	57.8	22.0	32.0	34.5	37.2
D. STAFFING DEFICIENCY										(.5)	(2.3)	10.8	6.4	(2.0)	6.6	4.0	11.0	11.0	22.7
or (OVER FORMULA)																			

*See instructions & example for Tech. Services under "Upper Division University Libraries Formula", Table VIII.

**Add 15% to total staff generated for hourly wage employees.

c

TABLE X

SUMMARY
MINIMUM LIBRARY STAFFING FORMULAS

	A	B	C	D	E	F	G	H	I	J
1. Actual FTE Staff Employed	41	48	49.7	38	37.5	51.2	18	21	23.5	14.5
2. California Formula										
a) Generated Staff	45.1	55.6	73.5	52.4	46.8	70.9	28.7	48.2	63.5	32.3
b) Deviation from Actual	4.1	7.6	23.8	14.4	9.3	19.7	10.7	27.2	40.0	17.8
c) Percent Deviation	10.0%	15.8%	47.8%	27.9%	24.8%	38.5%	59.4%	129.5%	170.2%	122.7%
3. Washington Formula										
a) Generated Staff	60.1	71.2	100.2	69.9	52.0	99.9	30.8	50.1	53.7	57.7
b) Deviation from Actual	19.1	23.2	50.5	31.9	14.5	48.7	12.8	29.1	35.2	43.2
c) Percent Deviation	46.6%	48.3%	101.6%	84.9%	38.6%	95.1%	71.1%	138.5%	149.8%	297.9%
4. Florida Formula										
a) Generated Staff	49.4	57.2	79.9	53.9	43.9	77.9	23.6	47.0	54.2	44.1
b) Deviation from Actual	8.4	9.2	30.2	15.9	6.4	26.7	5.6	26.0	30.7	29.6
c) Percent Deviation	20.5%	19.2%	60.8%	41.7%	17.0%	52.1%	30.8%	123.8%	130.6%	204.1%
5. Upper Div. Univ. Libraries Formula*										
a) Generated Staff	40.5	45.7	60.5	44.4	35.5	57.8	22.0	32.0	34.5	37.2
b) Deviation from Actual**	(.5)	(2.3)	10.8	6.4	(2.0)	6.6	4.0	11.0	11.0	22.7
c) Percent Deviation**	(1.2%)	(4.8%)	21.7%	16.8%	(5.3%)	12.9%	22.2%	52.4%	46.3%	156.5%

* Not including 15% of total for hourly wage employees

** () = Over formula

adoption if applicable.⁴ A library needing additional staff for special projects or media activities should request this staff based on justifiable grounds.

The recommended ratio of supportive staff to professional staff is approximately 2.5:1. Supportive staff needs may vary as much as ± 0.5 according to local needs and circumstances.

To arrive at average salaries per position, one must consider the average support staff type salaries in the local geographic area. Average professional salaries must be computed on the basis of both local and national salary offerings. In the final analysis, each institution must develop its own mix of staff and defend it through programs delivered. Hourly wage earners are generated at a 15 percent level over the staffing formula. The FTE hourly wages are converted to dollars at the average current local rate, which is typically equal to the beginning clerical rate paid by institutions.

TABLE XI
COMPARATIVE GROUP ANALYSIS
OF STAFFING FORMULAS

Actual staff employed by ten libraries: N = 342.4		C o m p a r i s o n s	
Formula generated staff for ten libraries		Deviation from actual (N)	Percent deviation
California	517.0	+174.6	50.9%
Florida	531.1	188.7	55.0
Washington	650.6	308.2	90.0
UDUL	410.1	67.7	19.7

2. Materials Formula. In analyzing the ten materials formulas, the institutions were tested individually and again as a hypothetical group of libraries serving in a single state system of higher education. This section will follow the pattern established earlier, describing the California, Florida and Washington materials formulas and applying them to the ten institutions. The following tables are presented in this section:

Table XII.	Components of Material Formulas: California, Florida, Washington, UDUL
Table XIII.	California Materials Formula Applied
Table XIV.	Florida Materials Formula Applied
Table XV.	Washington Materials Formula Applied
Table XVI.	UDUL Materials Formula Applied Part A: Books
Table XVII.	UDUL Materials Formula Applied Part B: Periodicals/Serials
Table XVIII.	Summary of Materials Formulas
Table XIX.	Comparative Group Analysis

A. Components of material formulas. It is obvious at first glance that the four formulas used in this analysis have a great deal in common, yet they yield different results vastly significant to a given institution or group of institutions.

The existing material formulas generate volumes only, leaving the periodical/serials group undefined for institutions. The UDUL formula, however, has introduced a criteria that sets the basic periodical/serial subscription needs in scope with the academic programs they support (see Table XII). This makes the UDUL formula uniquely different.

COMPONENTS OF MATERIALS FORMULAS

CALIFORNIA	FLORIDA	WASHINGTON	UPPER DIV. UNIV. LIBS.
1. Basic collection = 75,000 vols. for first 600 FTE students	1. No. doctoral programs x 15,000 volumes	1. No. doctoral programs x 24,500 volumes	Part A: Books 1. No. doctoral programs x 21,800 volumes
2. Add 10,000 vols. for each add'l 200 FTE students	2. No. masters programs w/o doct. x 7,500 vols	2. No. masters programs w/o doct. x 6,100 vols	2. No. masters programs w/o doct. x 10,500 vols
3. Add 3,000 vols. for each masters program	3. No. masters programs with doctoral x none	3. No. masters programs with doctoral x 3,050	3. No. masters programs with doctoral x none
4. Add 5,000 vols. for each doctoral program	4. No. FTE faculty x 100 volumes	4. No. FTE faculty x 100 volumes	4. No. FTE faculty x 115 volumes
5. Total volumes Generated	5. No. FTE students x 15 volumes	5. No. FTE students x 15 volumes	5. No. FTE students x 18 volumes
6. No. volumes in collection	6. Basic collection = 85,000 volumes	6. Basic collection = 85,000 volumes	6. Basic collection = 100,000 volumes
7. Collection deficiency or (over minimum)	7. Total vols. generated	7. Total vols. generated	7. Total vols. generated
	8. No. vols. in collection	8. No. vols. in collection	8. No. vols. in collection
	9. Collection deficiency or (over minimum)	9. Collection deficiency or (over minimum)	9. Collection deficiency or (over minimum)
TABLE XII			Part B: Periodicals/Serials
COMPONENTS OF MATERIALS FORMULAS			1. Basic collection of 1,000 subscriptions (Titles) Plus
			2. 10 titles per FTE faculty
			3. 5 titles per MA w/o doct.
			4. 3 titles per MA w/ doct.
			5. 15 titles per doctoral
			6. Total subscriptions (Titles)

TABLE XIII

CALIFORNIA STATE COLLEGE FORMULA:

LIBRARY MATERIALS

	A	B	C	D	E	F	G	H	I	J
1. Basic Collection = 75,000 vols. for first 600 FTE students	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000
2. Add 10,000 vols. for each additional 200 FTE students	72,000	70,000	301,250	151,850	87,850	215,000	53,750	10,600	-0-	111,500
3. Add 3,000 vols. for ea. Master's program	51,000	57,000	117,000	45,000	15,000	63,000	24,000	24,000	33,000	-0-
4. Add 5,000 vols. for ea. Doctoral program	-0-	-0-	-0-	-0-	-0-	10,000	-0-	-0-	40,000	-0-
5. Total Volumes Generated	198,000	202,000	493,250	271,350	177,850	363,000	152,750	109,600	148,000	186,500
6. No. of Volumes in Collection	170,513	144,445	179,463	262,692	150,417	261,053	120,000	187,510	195,185	363,853
7. Collection Deficiency or (over minimum)	27,487	57,555	313,787	9,158	27,433	101,947	32,750	(77,910)	(47,185)	(177,353)

TABLE XIV

FLORIDA FORMULA:

LIBRARY MATERIALS

	A	B	C	D	E	F	G	H	I	J
1. No. Doctoral Programs x 15,000 vols.	-0- /	-0-	-0-	-0-	-0-	30,000	-0-	-0-	120,000	-0-
2. No. Masters Programs w/o Doc. x 7,500 vols.	127,500	142,500	292,500	112,500	37,500	142,500	60,000	60,000	60,000	-0-
3. No. Masters Programs with Doc. x none	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
4. No. FTE faculty x 100 vols.	17,600	14,000	42,200	20,600	15,500	29,000	13,000	6,700	5,000	17,500
5. No. FTE students x 15 vols.	30,600	30,000	99,375	54,555	35,355	73,500	25,125	12,130	5,970	42,450
6. Basic Collection = 85,000 vols.	<u>85,000</u>	<u>85,000</u>	<u>85,000</u>	<u>85,000</u>	<u>85,000</u>	<u>85,000</u>	<u>85,000</u>	<u>85,000</u>	<u>85,000</u>	<u>85,000</u>
7. Total Volumes Generated	260,700	271,500	519,075	272,655	173,355	360,000	183,125	163,880	273,970	144,950
8. No. of Volumes in Collection	<u>170,513</u>	<u>144,445</u>	<u>179,463</u>	<u>262,692</u>	<u>150,417</u>	<u>261,053</u>	<u>120,000</u>	<u>137,510</u>	<u>195,185</u>	<u>363,852</u>
9. Collection Deficiency or (over minimum)	<u>90,187</u>	<u>127,055</u>	<u>339,612</u>	<u>9,963</u>	<u>22,938</u>	<u>98,947</u>	<u>63,125</u>	<u>(23,830)</u>	<u>90,785</u>	<u>(218,903)</u>

TABLE XV
WASHINGTON FORMULA:
LIBRARY MATERIALS

	A	B	C	D	E	F	G	H	I	J
1. No. Doctoral Programs x 24,500 vols.	-0-	-0-	-0-	-0-	-0-	49,000	-0-	-0-	196,000	-0-
2. No. Masters Programs w/o Doc. x 5,100 vols.	103,700	115,900	237,900	91,500	30,500	115,900	48,800	48,800	48,800	-0-
3. No. Masters Programs with Doc. x 3,050 vols	-0-	-0-	-0-	-0-	-0-	6,100	-0-	-0-	9,150	-0-
4. No. FTE faculty x 100 vols	17,600	14,000	42,200	20,600	15,500	29,000	13,000	6,700	5,000	17,500
5. No. FTE students x 15 vols	30,600	30,000	99,375	54,555	35,355	73,500	25,125	12,180	5,970	42,450
6. Basic Collection = 85,000 vols.	85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000
7. Total Volumes Generated	236,900	244,900	464,475	231,555	166,355	358,500	171,925	152,680	249,820	144,950
8. No. of Volumes in Collection	170,513	144,445	179,463	262,592	150,417	261,063	120,000	187,510	195,185	363,853
9. Collection Deficiency or (over minimum)	66,387	100,455	285,012	(11,037)	15,938	97,437	51,925	(34,830)	154,735	(218,903)

B. The development of the UDUL
Materials Formula.

Application of

the California, Florida and Washington formulas to the ten institutions tested shows how each formula affects the collection of an upper division institution. The California formula generated the least number of volumes, while the Florida model generated the most. As Table XVIII indicates, the ten institutions as a single group have a total of 2,035,181 volumes.

The California model application increases the desired minimum volume count by 267,669, or about 13.1 percent. The Washington model shows a difference between holdings and the formula amounting to 507,129 volumes representing a 24.9 percent increase. The Florida formula generates 2,625,210 volumes, representing a 28.9 percent increase in the minimum number of volumes.

The direction of the Florida model has been used to further increase formula-generated collections for upper division institutions. It was established in Chapter 1 that upper division university libraries need somewhat larger collections than traditional four-year institutions. It was impossible to establish with any degree of accuracy just how much larger the UDUL library should get before it reached a minimum level of adequacy. Expert opinions varied somewhat, but in general it was estimated in the 50 to 70 percent range.

The formulas tested addressed the issue of collection adequacy simply in terms of volumes. This was considered to be a major weakness because current subscriptions and serial publications, which are difficult to convert to volumes, represent about 50 to 60 percent of library acquisition costs. Ten years ago such subscriptions may have been only 20 to 30 percent of the budget. The increased costs raise many questions about subscriptions, including the number of them an institution must have.

TABLE XVI

UPPER DIVISION UNIVERSITY LIBRARIES
MATERIALS FORMULA. PART A: BOOKS

	A	B	C	D	E	F	G	H	I	J
1. No. Doctoral Programs x 21,800 vols.	-0-	-0-	-0-	-0-	-0-	43,600	-0-	-0-	174,400	-0-
2. No. Masters Programs w/o doc. x 10,500 vols	178,500	199,500	409,500	157,500	52,500	199,500	84,000	84,000	84,000	-0-
3. No. Masters Programs w/ doc. x none	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
4. No. FTE faculty x 115 vols.	20,240	16,100	48,530	23,630	17,325	33,350	14,950	7,705	5,750	20,125
5. No. FTE students x 18 vols.	36,720	36,000	119,250	65,465	42,426	80,200	30,150	14,616	7,164	50,940
6. Basic collection = 100,000 vols.	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
7. Total Volumes Generated	335,460	351,600	677,280	346,635	212,751	454,650	229,100	206,321	371,314	171,065
8. No. of Volumes in Collection	170,513	144,445	179,463	262,692	150,417	261,053	120,000	167,510	195,185	363,853
9. Collection Deficiency or (over minimum)	164,947	207,155	497,817	83,964	62,334	203,597	109,100	18,611	176,129	(192,768)

Note: A library should add not less than 25,000 carefully selected volumes per year
or five percent (5%) of its holdings, whichever is greater.

TABLE XVII
UPPER DIVISION UNIVERSITY LIBRARIES
MATERIALS FORMULA, PART B: PERIODICALS/SERIALS

	A	B	C	D	E	F	G	H	I	J
1. Basic Collection of 1,000 subscriptions (titles)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Plus										
2. 10 titles per FTE faculty	1,760	1,400	4,220	2,060	1,550	2,800	1,300	670	500	1,750
3. 5 titles per Masters w/o doctoral	85	95	195	75	25	95	40	40	40	-0-
4. 3 titles per Masters with doctoral	-0-	-0-	-0-	-0-	-0-	6	-0-	-0-	5	-0-
5. 15 titles per Doctoral	-0-	-0-	-0-	-0-	-0-	30	-0-	-0-	120	-0-
6. Total Subscriptions (TITLES)	3,845	2,495	5,415	3,135	2,575	4,031	2,340	1,710	1,666	2,750

TABLE XVIII

SUMMARY

MINIMUM LIBRARY MATERIALS FORMULA

	A	B	C	D	E	F	G	H	I	J
1. Actual Volumes in Collection	170,513	144,445	179,463	262,692	150,417	261,053	120,000	187,510	195,185	363,653
2. California Formula	198,000	202,000	493,250	271,850	177,850	363,000	152,750	109,800	143,000	186,500
Volumes difference	27,487	57,555	313,787	9,158	27,433	101,947	32,750	(77,910)	47,185	(177,353)
() = over minimum										
Percent deviation from actual collection	16.1%	39.9%	174.9%	3.5%	19.2%	39.1%	27.3%	(41.6%)	(24.2%)	(48.7%)
3. Washington Formula	236,900	244,000	464,475	251,653	166,355	359,500	171,925	132,830	342,920	144,950
Volumes difference	66,387	100,455	285,012	(11,037)	15,938	97,437	51,925	(34,330)	154,735	(218,903)
() = over minimum										
Percent deviation from actual collection	38.9%	69.6%	158.8%	(4.2%)	(10.6%)	(37.3%)	(30.2%)	(18.6%)	(79.3%)	(60.2%)
4. Florida Formula	260,700	271,500	510,075	272,653	175,355	360,000	183,125	163,860	275,970	144,550
Volumes difference	90,187	27,055	338,612	9,963	22,938	98,947	63,125	(23,630)	80,785	(218,903)
() = over minimum										
Percent deviation from actual collection	52.9%	87.9%	189.2%	3.8%	13.2%	37.9%	52.6%	(12.6%)	41.4%	(60.2%)
5. UDUL Formula, Parts A + B =	342,189	353,966	606,756	352,142	217,257	471,704	233,195	209,314	374,230	175,815
Volumes difference	171,676	211,521	507,293	89,450	66,840	210,651	113,195	21,804	179,045	(197,979)
() = over minimum										
Percent deviation from actual collection	100.7%	146.4%	282.7%	34.1%	44.4%	80.7%	94.3%	11.6%	91.7%	(51.7%)

*B = Periodical subscriptions converted by multiplying by 1.75

These issues were basic considerations in developing the UDUL materials formula. The UDUL model started out by adopting the basic Florida formula, but increased the number of volumes generated in all variable categories. Justification can be made on several grounds, one of which is the increase in new knowledge and information during the past 15 years. For example, the Clapp-Jordan Formula (1964), cited in Chapter 2, asked for a basic collection of 50,000 volumes. The U.S. trade publishers produced about 24,000 new titles during that year. In 1975 the trade publishers expect some 46,000 new titles to be published. If we associate basic collections with rate of publication, as the Florida and Washington formulas have done, the UDUL formula elements are reasonable.

Part B of the UDUL formula establishes the minimum number of periodical/serial titles to which a library should subscribe. The increase to a basic collection of 1,000 titles is based on the number and level of programs and the number of FTE faculty employed.

TABLE XIX
COMPARATIVE GROUP ANALYSIS
OF MATERIALS FORMULAS

Actual volumes owned by ten libraries: N = 2,035,131		C o m p a r i s o n s	
Formula generated volumes for ten libraries		Deviation from actual (N)	Percent deviation
California	2,302,800	+ 267,669	13.1%
Washington	2,542,260	507,129	24.9
Florida	2,625,210	590,079	28.9
UDUL	3,418,628	1,383,497	67.9

C. Recommended growth rate and
conversion of UDUL Formulas,
Parts A and B, to dollars. The UDUL

Materials Formula predicts only minimum collection adequacies. A library must continue to grow past this level once it has been reached. In fact, a minimum annual growth of the collection is equally important to a library whether the collection is below or above the figure indicated by the formula. The question remains, what is this minimum annual growth that must be maintained?

Both the Washington and Florida formulas suggest five percent growth of the collection on hand. There are certain weaknesses built into the five percent method, in that it ignores the depth and breadth of the institutions and the annual range of new publications, both domestic and foreign. These factors set the pace in minimum collection development and are as critical as the total volume count in a library.

The UDUL formula recommends that an upper division university library add to its collection not less than 25,000 volumes per year or five percent (5%) of its holdings, whichever is greater. The members of the Expert Panel consider this rate to be minimal growth both under and over the formula-generated collection count. Subscriptions are converted at the rate of 1.75 volumes per title when calculating annual growth rate.

Institutional growth must be predetermined, and budget requests should be based on the average cost of library materials. The following costs (the actual average costs for FAU for 1974/75) were used in computing the UDUL materials formula:

Monographic volumes	@ \$18.50
Subscriptions, serial/periodical titles	@ \$45.00

Obviously, each institution must determine its own dollar conversion. It may be less or more per volume and/or

title, depending on curricular emphasis affecting collection development.

3. The UDUL Expense Formula. The Expense Formula is unique in that no other expense prediction formulas of any kind are available for libraries. The need for a valid expense model is great, as one can see from Table I. Expense budgets ranged from \$18,000 to \$89,000 among the ten institutions selected for the study. The objective of the UDUL Expense Formula is to predict with a reasonable degree of accuracy the minimum dollar support a given library needs.

A. Development of the expense formula. The first step in this task was to define the typical and generally accepted expense items in libraries. Generally speaking, expense items include travel, rentals, postage, printing costs, supplies and other consumable items that cannot be classified as capital expenditure. Excluded from the expense category, also, are all salaries and wages. Some variation exists among states in their definition of when a supply item becomes a capital expenditure. Some states tie it to a dollar figure, setting an arbitrary limit of, let us say, \$50 or \$100. Under this system any item that costs over the set limit is not an expense item. Another method uses the cost plus useful life. Under this system any item over a predetermined cost of, e.g., \$25, which will last a fixed number of years, will be considered a capital expenditure. In discussing this problem with a number of administrators, however, it was agreed that the variations in state practices are not sufficient to upset the validity of a formula that discounts the gray areas of the definitions.

The UDUL expense formula was developed after considerable consultation with library administrators followed by an

analysis of actual budgets and other institutional data of the ten institutions in this study. The basic assumption in the development of this formula was that the cost-generating factors must be common to all libraries. The formula list had to be brief in order to be practical for institutional use. This requirement reduced the cost-generating factors to the following:

- (1) number of volumes added to collection
- (2) number of subscriptions
- (3) students served
- (4) faculty served
- (5) FTE library staff employed.

After considerable experimentation with assigning weights to these factors an acceptable expense formula emerged, as delineated in Table XX.

TABLE XX
UPPER DIVISION UNIVERSITY LIBRARIES
EXPENSE FORMULA

Item	F a c t o r	Weight
1.	Estimated no. vols. to be added to collection	x 1.75
2.	Subscriptions	
	a) no. titles	x 1.75
	b) results of (a)	x 5.00
3.	No. FTE students	x 0.75
4.	No. FTE faculty	x 1.50
5.	Total FTE library staff	x1,000
6.	Total of items 1 through 5	÷ by 2
7.	Convert points to dollars	ratio 1 : 1

TABLE XXI
UPPER DIVISION UNIVERSITY LIBRARIES EXPENSE FORMULA
APPLIED TO TEST INSTITUTIONS

	A	B	C	D	E	F	G	H	I	J
1. Estimated No. Vols. to be added to Collection x 1.75	35,294	51,296	50,961.75	25,963	37,094.75	48,954.50	15,323	55,756	83,798.75	14,218.75
2. a) No. Subscriptions x 1.75 b) Result x 5.00	33,643	21,831.25	47,381.25	27,431.25	22,531.25	35,271.25	20,475	14,962.50	14,577.50	24,062.50
3. No. FTE Students x 0.75	1,530	1,500	4,966.75	2,727.75	1,767.75	3,675	1,256.25	609	268.50	2,122.50
4. No. FTE Faculty x 1.50	264	210	633	309	232.50	435	195	100.50	75	262.50
5. Total FTE Library Staff x 1,000	41,000	48,000	49,740	38,000	37,500	51,200	18,000	21,000	23,500	14,500
6. Total 1 thru 5 ÷ 2	55,865.50	61,412.63	76,842.38	47,215.50	49,563.13	69,767.88	27,624.63	46,714	61,124.88	27,583.13
7. Convert to dollars @ ratio of \$1:1 pt.	\$55,265.50	\$61,418.63	\$76,842.38	\$47,215.50	\$49,563.13	\$69,767.88	\$27,624.63	\$46,714.00	\$61,124.88	\$27,583.13

TABLE XXII

SUMMARYMINIMUM EXPENSE FORMULA

	A	B	C	D	E	F	G	H	I	J
1. Actual Expense Budget:	\$ 89,106	\$ 89,082	\$ 45,525	\$ 22,338	\$ 23,359	\$ 37,399	\$ 18,000	\$ 27,000	\$ 52,200	\$ 26,699
2. UDUL Formula-generated Expense Budget	<u>55,865</u>	<u>61,419</u>	<u>76,842</u>	<u>47,218</u>	<u>49,563</u>	<u>69,768</u>	<u>27,625</u>	<u>46,714</u>	<u>61,125</u>	<u>27,593</u>
3. Dollars Difference ()=over genratd min.	\$ (33,241)	\$ (27,663)	\$ 31,317	\$ 24,858	\$ 24,204	\$ 32,369	\$ 9,625	\$ 19,714	\$ 3,925	\$ 894
4. Percent Deviation from Actual Exp. Budget	(37.3%)	(31.1%)	68.8%	111.2%	95.4%	86.6%	53.5%	73.0%	17.1%	3.3%

B. Conversion of UDUL Expense Formula to dollars. Using the 1973/74

academic year data as the base, the conversion of the formula to dollars on a one-to-one ratio is shown in line 7 of Table XXI. The application of the formula to the ten institutions resulted in reductions of expense budgets in some cases and increases in others. The spread of dollars decreased from a range of \$18,000-\$89,000 to a range of \$27,625-\$76,842 (see Tables XXI and XXII).

If we take the group of ten institutions and consider them again as a hypothetical single system of libraries we can determine the total impact of the formula. Through this formula, as Table XXIII shows, the ten libraries generated \$90,992 more than their actual combined 1973/74 expense budgets of \$432,728. This represents an increase of 17.2 percent for the hypothetical system libraries.

Expert Panel members and others have agreed that this formula produced reasonable hypothetical results for their institutions.

TABLE XXIII
EFFECT OF UDUL EXPENSE FORMULA
ON HYPOTHETICAL SYSTEM
OF TEN LIBRARIES

Actual expense funds available in ten libraries, 1973/74	\$432,728
Formula-generated expense funds for ten libraries	<u>523,720</u>
Formula dollar difference from actual funds	+\$ 90,992
Formula percent difference	17.2%

C. Expense funds projection
using UDUL Formula.

If a Library generated 55,000 points in the formula during 1973/74, these would be converted to \$55,000 with the 1:1 ratio.

Using an economic index, the base year should be considered as 100 percent. On this basis, inflationary increments can be calculated annually for future years. Hence, if the budget for 1974/75 included a 12 percent inflationary factor, the 55,000 points generated by that same library would be calculated as follows:

$$55,000 \times 1.12 = 61,600 \times \$1.00 = \$61,600$$

The formula as developed will generate funds proportionate to institutional growth and development. It will also respond to proportionate reductions in enrollment, staff and other factors.

Summary

Chapter 4 discussed phases two, three, four and five of this developmental research project, as described in the Procedures section of Chapter 3.

This study selected ten upper division university libraries, from a total population of twenty-eight, to be included in the development of budget prediction formulas particularly suited to the needs of this type of institution. A questionnaire method was used to initiate the data-gathering phase of the project. The institutional data obtained from the questionnaires was applied to existing formulas (California, Florida, Washington).

Results of these formula applications, as shown in numerous tables in this chapter, were used to develop the UDUL Staffing and Materials Formulas.

In addition to the Staffing and Materials formulas, this project resulted in the development of an UDUL Expense Formula model that is unique in the field. This is the first known expense formula technique and should be of interest to library administrators beyond the UDUL group.

Consultations were held with individual members of the Expert Panel and members of the ALA, ACRL, UDUL Committee. Changes and useful suggestions were incorporated in the final UDUL formulas.

Annotated References Chapter 4

¹Members of the ALA, ACRL, UDUL Committee are:

Peter Spyers-Duran, Chairman	Florida Atlantic University
James C. Andrews	Rensselaer Polytechnic Institute
Dick L. Chappell	Univ. of Texas-Permian Basin
James T. Dodson	Univ. of Texas-Dallas
Irlene R. Stephens	Richmond College-CUNY
Richard Vorwerk	Governors State University

²Dr. Robert Altman is Executive Director, Association of Upper Level Colleges and Universities, 28 Merion Place, Lawrenceville, New Jersey 08648.

³Expert Panel members are:

Howard Cordell	Florida International University
Howard W. Dillon	Sangamon State University
Gloria E. Ellis	Walsh College of Accountancy and Business Administration
Andrew Farkas	University of North Florida
Emerson Jacob	Penn State Univ. -Capital Campus
Bruce Keeney	State University College at Utica
James Servies	University of West Florida
W. Walter Wicker	Univ. of Houston-Clear Lake City

⁴Brong, Gerald R. A Resource Prediction and Allocation Model for Audiovisual Centers in Higher Education. Washington State University, 1972. Ed.D. dissertation.

Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The ~~purpose of this study~~ was to develop and recommend a model library budget formula for upper division university libraries (UDUL). This formula was to cover all major budget categories commonly found in academic libraries, i.e.: salaries (staff); materials (books, periodicals, etc.); expense (supplies, travel, rentals, etc.). The examination of the physical facilities category was excluded from this study on the grounds that such budgets are typically not part of annual operating budgets.

The scope of this study was limited to formula budgeting, defined as "a method of line item budgeting based upon quantitative models which express the budgetary support needs generated by operating programs and functions". To accomplish the objectives of this study, the investigation was developed through six phases.

In Phase 1 currently-used budget formulas were identified and evaluated for possible inclusion in this study. The California, Florida and Washington formulas were retained for comparison and use as models which could be improved upon. Other formula models were discarded because they either represented a duplication of the Washington model or were simply less sophisticated in design.

In Phase 2 library data was collected through a questionnaire

from upper division university libraries known to exist in the United States. Ten tax-supported institutions were selected for inclusion in the study.

In Phase 3 the existing California, Florida and Washington formulas were applied to the ten upper division universities. The results were evaluated by members of an Expert Panel.

Phase 4 included the development of three UDUL formulas: (a) staffing, (b) materials and (c) expense. Again the results were evaluated by members of the Expert Panel.

As Phase 5 the final product was reviewed in Chicago on January 22, 1975, at a meeting of administrators representing upper division university libraries.

The final step, Phase 6, includes conclusions and recommendations as reported in this chapter concerning feasibility and utilization value of the UDUL formulas.

The UDUL formulas described in Chapter 4 were produced through the cooperation of ten library directors participating in the study, with the aid and assistance of members of the Committee on Upper Division University Libraries of the American Library Association and those individuals constituting the Expert Panel. The models contained in that chapter were reviewed for the purpose of assessing their usefulness and adaptability to upper division libraries. Each individual received a copy of the formulas and appropriate tables showing the actual application of the formulas to ten institutions. Their responses and comments helped to formulate the model presented.

Expert Panel members basically agreed that library budget formulas can support statewide goals and objectives and that they tend

to treat all institutions equally. This is probably one of the reasons an increasing number of states have moved toward operating budget formulas. It was also agreed that formulas are not an end, but rather a means by which needs can be expressed. There was unanimous agreement that governing boards must consider many other facts in addition to these formulas in order to arrive at an adequate level of support. Each process must have a beginning, however, and the use of a budget formula establishes an accurate measure of need.

Conclusions

The overall goal of the investigator was the development of a model library budget formula that is particularly sensitive to institutions which do not have lower division enrollments. Further, it was the objective of the study to utilize existing library budget formulas upon which the UDUL formula could be developed. In Chapter 3, Item 7 of the Assumptions stated that it might be unnecessary to "invent" an entirely unique formula. Indeed, the testing of the Florida formula with some modification became the basis on which the desired model for staffing and materials was built. The third major category, expense, had to be treated differently as there was no known formula available. For this reason an expense formula was created. These formulas have been field tested to show hypothetical budget results in the upper division university libraries. The development details of the UDUL formulas are discussed in Chapter 4.

The acceptability of the UDUL formulas was based on their ability to provide reasonable predictions of desired resources necessary to operate upper division university libraries. Acceptance of the UDUL Formula by a majority of library directors indicates that these formulas can be used for predicting resources needed for the operation and maintenance of upper division libraries.

Formulas are useless, however, without a skillful administrator who can effectively utilize the formula-generated results in the planning-budgeting process. There is constant danger of blind acceptance of formulas without an effort to properly interpret results. For this reason, it is appropriate to review the formulas' capabilities and restrictions.

1. What the formulas will do

A. The Staffing formula provides an indication of the minimum number of FTE line-item positions needed to carry out the functions of an upper division university library. In addition, it generates hourly-rate (student) help in the amount of 15 percent of the total FTE line-item positions.

B. The Materials formula establishes the minimum size of (a) the book collection and (b) periodical/serial subscriptions. It also suggests a minimum annual growth rate that may, in the final analysis, be more important than overall size. This suggested growth rate has been set at 25,000 carefully selected volumes, or five percent (5%) of the total collection, whichever is greater.

C. The Expense formula is based on cost-generating factors common to all libraries. It considers only typical costs in an average institution; therefore, it must be regarded as a minimum formula that must be expanded if the library engages in projects demanding additional funding.

2. What the formulas will not provide

A. The Staffing formula will not provide salary levels. Further, it will not establish the exact mix of professional and non-professional staff; however, the suggested ideal ratio of professionals

to non-professionals would be not less than 1:2 and not more than 1:3.

B. The Materials formula will not provide gross budget figures. As stated earlier, this formula generates desired collection size and rate of growth only. The actual dollars needed must be generated by establishing the average cost per volume and multiplying that cost by the expected number of volumes to be added to the collection. The same techniques must be used for periodical subscriptions. Such figures can be obtained from authoritative sources such as the Bowker Annual or from institutional purchasing history. The materials formula cannot distinguish between good and useful books and the outdated or poorly written ones. One must assume that the quantity expressed in the formula will be interpreted as the highest quality possible.

C. The Expense formula cannot include all possible expenses. For example, the level of automation an institution desires can increase the need for additional funds. This type of expense, as well as special projects, must be added to the formula-generated base.

D. None of the above formulas identifies the level of support generated by a given sub-unit of a campus. The needs are established collectively for the entire campus.

E. None of the above formula categories should be used as a substitute for value judgement. Formulas are simply indicators of need, which require consideration and interpretation in the budgeting process.

3. Identified weaknesses and possible problems of a model budget formula system

A. The UDUL Formula makes no special provision for administrative staff. It leaves to each institution the determination of the size of the library managerial staff.

B. The Formula assumes an equal difficulty of cataloging in all institutions and does not provide for the added complexities of technical processing associated with a larger collection.

C. The Formula does not provide for factors to compensate for a decentralized organization. Decentralization is not now a problem in the type of institutions we have studied, but it could become a problem in the future.

D. Libraries render services on different levels. The Formula does not recognize the possible differences that may exist, but simply aims at the average needs.

E. The Formula does not provide for any research or development, but assumes this cost will be an add-on. There is always danger in assuming that an institution will be willing to go beyond the formula-generated funds.

F. The Formula identifies minimum needs. There is a potential danger that institutions will see the formula-generated minimums as maximums. If this should develop, all non-formula-generated costs would appear as luxuries.

G. Formula budgets further depend upon several important issues, for example:

(1) Higher education in general and libraries in particular suffer from a lack of accepted definitions. Consider, for instance, the issue of program count. When is a program a genuine program and not a track?

(2) Credibility of a formula among board members and legislators. Unrealistic formula results will erode the confidence of these groups in the formula's validity.

Institutions adopting formula budgeting should be aware of the limitations that exist. A comprehensive formula should produce a

reasonably adequate budget prediction for financial support. It would enable libraries to continue their present scope of activities and provide for anticipated increases or decreases in work loads.

Recommendations and Need for Further Studies

The primary recommendation resulting from this study is that upper division institutions give serious consideration to the adoption of the UDUL Formulas. The adoption of the Formulas will give these institutions the minimal resources necessary to serve their institutions.

In addition, the need for further studies is recognized and recommended as follows:

1. Formulas should not remain static. They should be constantly improved in order to become more accurate management tools. Continual research must be stimulated to assure the current and future relevance of the UDUL formulas.
2. Research is needed to determine the value of formulas in contributing to the understanding of library needs by institutional presidents, governing boards, legislators and others.
3. Studies of the factors which lead to the adoption or abandonment of formulas, including the reasons for changing formula elements, should be encouraged.
4. Research is needed to develop a better understanding of the reasons for measuring productivity and cost in libraries.
5. Research is needed to demonstrate the most appropriate techniques to employ budget formulas in academic libraries.
6. Studies must be conducted to refine formula techniques that will improve the accuracy of the budget prediction models.

7. A followup study is needed to measure the success or failure of the UDUL formulas and to identify their impact on the future level of support the participating libraries will experience.

APPENDIX I

August 20, 1974

MEMORANDUM

To: Committee on Upper Division Libraries

From: Peter Spyers-Duran, Director of Libraries, FAU ^{PSD}

Subject: Questionnaire Evaluation

Please find enclosed a draft copy of the questionnaire for your evaluation, suggestions and additions.

As you recall our meeting in New York, the final version of the questionnaire will be sent to all the upper division libraries known to us. I will apply the various known formulas to the data received back from this group. Once that is done, I will return the results for your evaluation and selection of the most compatible formula.

I would appreciate it if you could return your response by return mail.

PSD/lf
encl.

James C. Andrews
Dick L. Chappell
James Dodson
Irlene R. Stephens
Richard Vorwerk

Rensselaer Polytechnic
Univ. of Texas-Permian Basin
Univ. of Texas-Dallas
Richmond College, N.Y.
Governors State Univ.

BUDGET FORMULA STUDY QUESTIONNAIRE
FOR UPPER DIVISION UNIVERSITY LIBRARIES

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1. Total number of volumes equivalency* in collection as of June 30, 1974: _____

*Equivalents inclusions and exclusions:

- a. one volume = one volume
- b. one reel microfilm = one volume
- c. eight microcard or fiche = one volume
- d. three maps = one volume
- e. all other types: e.g., films, phono records, tapes, etc. = one-to-one basis
- f. for reporting purposes
include all such materials as have been classified, cataloged and prepared for use;
exclude such groups as government depository collections, ERIC, HRAF, and all archival type collections.

2. Number of FTE faculty positions during 1973/74: _____

3. Number of FTE students during 1973/74:
(use 3-quarter or 2-semester average) _____

- a. Give breakdown of students by level

Number 100/200 level (freshman/sophomore) _____
 Number 300/400 level (junior/senior) _____
 Number 500 level (beginning graduate) _____
 Number 600 level (master) _____
 Number 700 level (doctoral) _____

4. Number of registered outside** users of library: _____

5. Number of Honors undergraduates (if any): _____

6. Number of masters fields without doctorates: _____

7. Number of masters fields with doctorates: _____

8. Number of doctoral fields: _____

9. Number of total FTE library staff: _____

- a. allocated to Technical Services _____
- b. allocated to Public Services _____

10. Number of I-L-L transactions during last fiscal year: _____

**defined as "persons not connected with the institution who make use of the collection, who are registered and possess a borrower's card".

11. What was your library budget for 1973/74?

- a. FTE staff _____
- b. Hourly rate staff _____
- c. Materials (books, binding, periodicals, etc.) _____
- d. Expense (rentals, postage, supplies, etc.) _____

Total Library Budget: _____

12. What is the budgeting method currently used at your institution?

(Check one)

- a. Formula _____
- b. PPB _____
- c. Lump sum _____
- d. Line item _____
- e. Last year base plus _____
- f. Combination of above (specify) _____

13. Is there any indication that your institution is moving toward formula budgeting? Yes _____ No _____

14. Do you approve formula budgeting for libraries? Yes _____ No _____

15. Do you feel that upper division college/university libraries should have formulas that are particularly sensitive to the special needs of such institutions? If Yes, why? * Yes _____ No _____

16. If you have a formula now, is that formula arbitrarily altered by offices outside the library? Yes _____ No _____

17. Is your institution in a state system? Yes _____ No _____

18. Is your institution (check one)

- a. state supported _____
- b. private _____
- c. other (specify) _____

19. Where in your system are library asking budgets determined?

- a. Librarian _____
- b. Campus Business Officer _____
- c. President (Chief Campus Officer) _____
- d. Other (specify) _____

*If your answer to No. 15 is "Yes", please give your reasons on reverse side of this sheet.

20. Where in your system is the budget distribution determined?

21. How do upper division university libraries differ from four-year institutions?

a. Does your library have the "upper half" of collections only?

Yes _____ No _____

b. If your answer is "No", please explain the extent and degree of lower division level collection development.

c. Estimate the percentage of the collection development budget spent on lower division material. _____ %

d. What are the characteristics of library services to students and faculty in an upper division school? Do these represent a special problem in both level and number of staffing required?

22. Describe your faculty in terms of their demand on the library for their research and teaching needs (circle one).

	Heavy demand				Low demand
Teaching	1	2	3	4	5
Research	1	2	3	4	5
Community service	1	2	3	4	5
Interlibrary loan	1	2	3	4	5

Submitted by:

_____ name

Date:

_____ title

_____ institution

Please return to:

Peter Spyers-Duran, Director of Libraries
Florida Atlantic University
Boca Raton, Florida 33432

Phone: (305) 395-5100, ext. 2442

APPENDIX II

List of Upper Division Colleges and Universities
in the U.S., Fall 1974

members

Pacific Oaks College
714 West California Boulevard
Pasadena, California 91105

Florida Atlantic University
Boca Raton, Florida 33432

Florida International University
Tamiami Trail
Miami, Florida 33144

University of North Florida
P.O. Box 17074
Pittsburg Station
Jacksonville, Florida 32216

The University of West Florida
Pensacola, Florida 32501

Governors State University
Park Forest South, Illinois 60466

Sangamon State University
Springfield, Illinois 62708

Concordia Senior College
6600 North Clinton Street
Fort Wayne, Indiana 46825

University of Baltimore
1420 North Charles Street
Baltimore, Maryland 21201

Walsh College of Accountancy and
Business Administration
P.O. Box 35
Troy, Michigan 48084

Minnesota Metropolitan State College
LL90 Metro Square
St. Paul, Minnesota 55101

Richmond College of the City
University of New York
130 Stuyvesant Place
Staten Island
New York, New York 10301

Upper Division School of Applied Science
Rochester Institute of Technology
One Lomb Memorial Drive
Rochester, New York 14623

State University College at Utica/Rome
811 Court Street
Utica, New York 13502

College of Community Services
French Hall
University of Cincinnati
Cincinnati, Ohio 45221

Garfield Senior College
c/o Lake Erie College
Painesville, Ohio 44077

Capital Campus,
Pennsylvania State University
Middletown, Pennsylvania 17057

Texas A and I University
at Corpus Christi
P.O. Box 6010
Corpus Christi, Texas 78411

Texas A and I Center at Laredo
P.O. Box 537
Laredo, Texas 78040

East Texas State University Center
at Texarkana
P.O. Box 5518
Texarkana, Texas 75501

Tyler State College
100 East Berta Street
Tyler, Texas 75701

University of Houston at Clear Lake City
Cullen Boulevard
Houston, Texas 77006

University of Houston, Victoria Center
2708 North Ben Jordan Street
Victoria, Texas 77901

University of Texas at Dallas
P.O. Box 30365
Dallas, Texas 75230

University of Texas
of the Permian Basin
Odessa, Texas 79762

Milwaukee School of
Engineering
Technology Park
Milwaukee, Wisconsin 53201

Non-member
Upper Level Universities

Anchorage Sr. College of
University of Alaska
2533 Providence Ave
Anchorage, AK 99504

Monterey Institute of
Foreign Studies
425 Van Buren St
Monterey, CA 93940

the association of upper level colleges and universities

APPENDIX III

Mr. Gary D. MacMillan, Director
Upper Division School of Applied Science
Rochester Institute of Technology
One Lomb Memorial Drive
Rochester, New York 14623

Dear Mr. MacMillan:

As Chairman of the ALA ACRL Committee on Upper Division Universities, I am sending the enclosed questionnaire to all twenty-nine of the upper level university libraries known to exist. The cooperation of each of you will help in developing a Model Budget Formula that will serve the unique needs of our type of institution which, by and large, are unrecognized in the existing budgeting processes.

Considerable work has already gone into developing a model budget formula for upper division universities which may be completed by February 1975. We hope to develop national guidelines and standards that may help the future development of these libraries. We need institutional data to finish this ambitious project.

Please take a few minutes of your time to fill out the enclosed questionnaire and send it to me by return mail. I will send you a copy of the model formula as soon as it can be developed based on the questionnaires. This project is one of the first efforts toward seeking some recognition of the special character of upper division university libraries. Your help and support is much needed.

I would like to invite you to serve on our Expert Panel and provide an opportunity to review the model formula before it is presented for adoption. Your input, criticism and evaluation will be invaluable in assuring quality in such a project. This can be handled by mail; however, we do plan to have an open discussion on the matter as one of the ALA programs. I hope the enclosed memo will reflect your acceptance.

Many thanks for your cooperations.

Sincerely,

Peter Spyers-Duran

Peter Spyers-Duran
Director of Libraries

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PSD/ks
enclosures

APPENDIX IV

Date: _____

MEMORANDUM

TO: Peter Spyers-Duran
Director of Libraries
Florida Atlantic University

FROM: _____
Name & Title

Institution

Please find enclosed your Model Library Formula Budget Study Questionnaire.

- ☐ I will be pleased to receive a draft copy of the proposed model and react to it as a member of the Experts Panel.
- ☐ I will be interested to receive a draft copy of the proposed model, but must decline serving on the Experts Panel.

MEMORANDUM

To: Participating Experts in the Upper Division University Libraries (UDUL) Formula Study

From: Peter Spyers-Duran, Chairman of UDUL Committee and Principal Investigator *P. Spyers-Duran*

Subject: Comparative Analysis of California, Florida and Washington Formulas and Evaluation of UDUL Formula

Please find enclosed a comparative analysis of the California, Florida and Washington formulas. These, being the most advanced formulas in existence, have been used to develop a UDUL Formula, altered to suit upper division library needs.

Please look over the proposed UDUL formulas and evaluate them by using the enclosed evaluation sheet.

The ALA, ACRL, UDUL Committee will meet at 2:00 p.m. Monday, January 20, 1975, at the Palmer House. You are cordially invited to attend our meeting and participate in the evaluation of these formulas.

If you cannot attend, I would appreciate receiving your evaluation by January 30, 1975. A "no response" will be interpreted as your complete satisfaction with the proposed UDUL formulas.

Many thanks for your cooperation.

PSD/g
enclosures

EVALUATION OF UDUL FORMULAS

In evaluating the proposed UDUL formulas, please feel free to add your thoughts and comments to these questions. Attach additional sheets of paper if needed.

A. STAFFING FORMULA

1. The UDUL Staffing Formula is (check one)

☐ a) better than other formulas
☐ b) about the same
☐ c) worse

Comments:

2. Would you recommend adoption of the UDUL Staffing Formula (check one)

☐ a) without change
☐ b) under no circumstances
☐ c) only if the following changes are incorporated:

Comments:

3. What is your overall evaluation of the UDUL Staffing Formula?

B. MATERIALS FORMULA

1. Do you agree with the UDUL formula concept which separates books from serials/periodicals?

☐ Yes ☐ No

2. Is this approach (check one)

☐ a) better than the other formulas use
☐ b) about the same
☐ c) worse

Comments:

- B. 3. Would you recommend adoption of the UDUL Materials Formula (check one)
- ☐ a) without change
 - ☐ b) under no circumstances
 - ☐ c) only if the following changes are incorporated:

Comments:

4. What is your overall evaluation of the UDUL Materials Formula?

C. EXPENSE FORMULA

1. The UDUL Expense Formula is (check one)
- ☐ a) agreeable for adoption without change
 - ☐ b) a complete disaster; abandon
 - ☐ c) has potential, but needs the following changes:

2. Please comment:

submitted by:

prepared by:
Peter Spyers-Duran, Chairman
ALA, ACRL, UDUL Committee
13 January 1975

CURRICULUM VITAE

Peter Spyers-Duran
637 S.W. Fourteenth Street
Boca Raton, Florida 33432

Born January 26, 1932, Budapest, Hungary. U.S. citizen.

Married: Jane F. Cumber. Children: Kimberly, Hilary, Peter.

Education: University of Chicago, Graduate Library School,
M.A. 1960; Nova University, Ed.D. 1975.

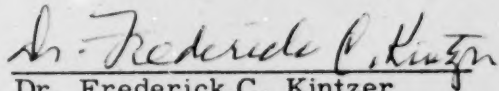
Employment: Professor and Director of Libraries, Florida
Atlantic University, 1970- ; Professor and Director of Libraries,
Western Michigan University, Kalamazoo, Mich., 1967-1970; Asso-
ciate Professor and Associate Director of Libraries, University of
Wisconsin-Milwaukee, 1963-1967; American Library Association,
Professional Assistant, 1962-1963; University of Wichita, Instructor
and Head of Circulation Department, 1960-1962; Chicago Public
Library, Reference Librarian, 1959-1960; University of Chicago
Law Library, Catalog Department, 1957-1959.

Member: American Library Association (life); Florida and
Southeastern Library Associations; Florida Association of Public
Junior Colleges; Board of Directors, United Fund of Greater Boca
Raton.

Listed in: Who's Who in America, Contemporary Authors,
Who's Who in Library Service, Dictionary of International Biography,
Who's Who in American Education.

Author: Moving Library Materials, 1964; Basic Fringe Bene-
fits for Public Libraries in the U.S., 1967; Approval and Gathering
Plans in Academic Libraries, 1970; Advances in Understanding Ap-
proval Plans in Academic Libraries, 1971; Economics of Approval Plans,
1972; Management Problems in Serials Work, 1973; contributor to
professional journals and technical reports.

I certify that I have read and am willing to sponsor this Major Applied Research Project. In my opinion it conforms to acceptable standards and is fully adequate in scope and quality as a Major Applied Research Project for the degree of Doctor of Education at Nova University.


Dr. Frederick C. Kintzer
MRP Advisor

I certify that I have read this Major Applied Research Project and in my opinion it conforms to acceptable standards for Major Applied Research Projects for the degree of Doctor of Education at Nova University.


Dr. James Chinn
Cluster Coordinator

This Major Applied Research Project was submitted to the Central Staff of the Nova University Ed. D. Program for Community College Faculty and is acceptable as partial fulfillment of the requirements for the degree of Doctor of Education.


Dr. George M. Barton
Nova University